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THE FIFTEENTH INTERNATIONAL
CONGRESS ON
HYGIENE AND DEMOGRAPHY

HELD IN WASHINGTON, D. C.
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I. Some Lessons and Suggestions from the Exhibition

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II. Digests of Some of the Papers Presented at the Congress



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CONTENTS.

	Page.
Letter of transmittal.....	5
Introduction.....	7

PART I.

School buildings and school sanitation.....	9
Glass blackboards.....	11
Drinking fountains.....	11
The Forsyth Dental Infirmary for Children.....	12
Dental clinic.....	13
Spiral fire escape.....	13
The dust problem.....	14
Cleaning and humidifying the air.....	15
Sanitary toilets.....	16
School desks.....	17
Hygiene and tuberculosis.....	18
The value of pure air.....	18
Open-air schools and open-air sleeping rooms.....	19
Boy Scouts.....	22
Industrial hygiene.....	23
Nourishment of children.....	26
Mental hygiene.....	28
Sex hygiene.....	35
Experimental psychology.....	38
The Cornell exhibit.....	38
Appendix.—Instructions relating to tuberculosis, distributed by the department of health, New York City.....	40

PART II. ABSTRACTS OF PAPERS BEARING ON EDUCATION.

Ringworm in the schools of Mexico. By Dr. Manuel Uribe y Troucoso.....	44
School disinfection. By Dr. J. T. Ajmeele Walker.....	44
Campaign against contagious diseases of children. By Dr. Walther Ewald.....	45
Management of tuberculosis among school children. By Dr. Arthur T. Cabot.....	46
Studies in the relation of physical inability and mental deficiency to the body social. By Dr. Isabelle T. Smart.....	47
Education of immigrants in school. By Dr. William B. Chancellor.....	48
Service of medical inspection of schools to the teacher. By Dr. Helen Mac Murdy.....	49
Follow-up system in medical inspection. By Dr. Thomas A. Storey.....	50
Hygiene of children's teeth. By William H. Potter, D. M. D.....	51
Dental hygiene for pupils of public schools. By Dr. S. Adolphus Knopf.....	52
Universal system of measurements. By Dr. Leotardo Matus Z.....	53
Development of hygiene in educational institutions. By Prof. Dudley A. Sargent.....	53
Training in personal hygiene in private and public schools. By Prof. John W. Ritchie.....	55
The public school as a factor to lesser infant mortality. By Dr. Henry L. Coit.....	56
Physiological age in education. By Dr. C. Ward Crampton.....	56
School children of the stock-yards district of Chicago. By Dr. Caroline Hedger.	57

LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION,
Washington, D. C., March 20, 1913.

SIR: The Fifteenth International Congress on Hygiene and Demography, held in Washington City in the autumn of 1912, was a notable event in the history of sanitation and in the discussion of the conditions of the physical and mental health of the people. The exhibition held in connection with the congress was instructive in many ways, and contained much of interest to those who are responsible, directly or indirectly, for the health of children.

The first section of the accompanying manuscript contains brief and accurate descriptions of some of the most important of the exhibits, and comprehensive summaries of their meaning. The second section consists of excerpts and summaries containing the gist of some of the most important papers read at the congress. I believe both will be permanently helpful to teachers, school officers, and others interested in the health of children and the sanitation of homes, schools, and other places in which they work. I therefore recommend the publication of the manuscript as a bulletin of the Bureau of Education.

Respectfully submitted.

P. P. CLAXTON,
Commissioner.

The SECRETARY OF THE INTERIOR.

INTRODUCTION.

The exhibition arranged under the direction of Dr. J. W. Scheschewsky, of the United States Public Health Service, in connection with the Fifteenth International Congress on Hygiene and Demography held in Washington the latter part of September, 1912, was in many regards a remarkable one. To those who had no time to spare in making a careful and critical examination of the materials and facts presented, as well as to those who strolled through the various sections out of mere curiosity, the multiplicity of details was doubtless overpowering and perplexing. Those, however, who had time to examine carefully and to classify and unify the complex materials presented, saw that comparatively few hygienic principles were involved.

When people have pure food, pure water, pure air, and are freed from the dust of houses, streets, and manufacturing industries; when they have good light and abundant sunshine, sanitary houses, barns, and outbuildings; when they are protected from germ-carrying agencies, such as flies, mosquitoes, rats, mice, and all such pests; when they are protected from people who are carriers of disease germs, and taught how to disinfect their homes and communities; when they are taught to work and play, eat and sleep, dress and bathe, according to the laws of health; when they learn to care for their teeth and their eyes, the main problems of hygienic living will be solved and human life relieved of its greatest sources of suffering and disease.

The attempt has been made in Part I of this bulletin to describe in a brief way some of the suggestive exhibits presented in connection with this congress. In no way does it attempt to give an adequate idea of the extent and richness of the exhibition as a whole, but merely to select a few exhibits that had more or less direct bearing on school work and school conditions.

Part II is made up of abstracts from a few of the papers presented at the congress. A volume containing these abstracts was printed by the congress in English, and those here reproduced have been taken from this volume, with few changes.

THE FIFTEENTH INTERNATIONAL CONGRESS ON HYGIENE AND DEMOGRAPHY.

PART I.

SCHOOL BUILDINGS AND SCHOOL SANITATION.

In connection with the various State health exhibits, many photographs of school buildings were exhibited. Most of these represented good buildings, constructed in such a way as to aid in conserving the health of the children. Some were bad. The most common faults consisted in imperfect illumination and inadequate arrangements for ventilation, for ridding the air of soot and dust, and for properly humidifying the air in the colder climates.

The problem of inducing architects and schoolmen to locate the windows in schoolrooms in the proper places, and to orientate their buildings in such a way as to take the best possible advantage of the light, is, it seems, an almost hopeless task. By the side of conspicuous placards lauding the value of sunshine as a disinfectant and of good light as a means of conserving the vision of the children were to be found school buildings officially commended, but so constructed that not a glimpse of sunshine could ever enter some of the classrooms for the elementary grades, while the windows were badly placed in others. The officers of State boards of health are doing a great service, but some of them must learn that the correct planning of a schoolhouse is not a matter that can be picked up incidentally. Bread pills mixed with a big dose of dogmatic assurance concerning their curative properties, discreetly given, might establish an enviable reputation; but a poorly constructed schoolhouse demonstrates its defects every day to teacher and pupils. It is to be hoped, if State boards of health are going to take a large part, directly or indirectly, in the supervision of the construction of school buildings, that they will make a thoroughgoing study of all the problems involved.

The exhibition of knock-down models of rural schoolhouses presented by the United States Bureau of Education attracted a good deal of attention. This exhibit consisted of 6 models; 3 illustrating varieties of one-room buildings, and 1 each of a two, three, and four room building. The main purpose of exhibiting these models was to set forth a plan by which the bureau will undertake to help the rural

districts to better types of school buildings. The chief obstacle which has so long blocked the way to progress in securing better types of rural schoolhouses is the inability or unwillingness of rural school trustees to employ a competent architect to plan their buildings and supervise the construction. The so-called architect and builder, or more often the ordinary "hatchet-and-saw" carpenter of the country, generally builds a schoolhouse by copying the plan of some building in a neighboring district, which in turn has been copied from some other one. As a result the progress in constructing better and more beautiful buildings is slow and uncertain. It seemed that progress in these regards might be accelerated and guided by preparing some carefully planned models, in a knock-down form, to be sent directly to district trustees or to county superintendents, then set up and copied by the carpenters who are called on to build rural schools. The floor plans, elevations, and all parts of these models were drawn to scale.

Three of the models, 2 one-teacher buildings and 1 three-teacher building, were constructed by Cooper & Bailey, architects of Boston, and 1 one-teacher building, 1 two-teacher building, and 1 four-teacher building, were constructed by Mr. W. B. Ittner, the school architect of St. Louis. The floor plans were furnished by the Division of School Hygiene and Sanitation of the Bureau of Education. Duplicates of these models have been prepared by the Bureau of Education and are loaned, on request, to those who can use them in building schoolhouses.

A model and numerous photographs illustrated types of reenforced concrete buildings. The model shown was for a concrete building suitable for use in a one-teacher district. These concrete buildings were designed particularly to meet the most advanced demands of State regulations for fire protection. They are literally fireproof. A special feature claimed for these buildings is their economy from the point of view of construction and repairs. Public School No. 5, at Irvington, N. J., has been in use four years, and the statement was made that not 1 cent has been spent on it for repairs. By the unit system, buildings of factory-made concrete parts are now being put up that "are fireproof, weatherproof, dust proof, soundproof, and sanitary," at a cost less than if built of brick or wood. Photographs were exhibited of many large school buildings constructed of reenforced concrete at a smaller cost than the estimates submitted for the construction of the same in brick and wood.

Such an exhibit as this is encouraging, for there can be little doubt that under many conditions the best and safest material to use in the construction of school buildings is reenforced concrete; and when it is found that the first cost may be less rather than greater, it will cause more school architects to plan for the use of concrete.

Glass blackboards.—Several glass blackboards were on exhibition. It is claimed for these blackboards that they are absolutely non-absorbent; that they will not crack, craze, or deteriorate in any way; that they are cleaned with a plain rag much more easily than the ordinary type of board. Since the idea of glass blackboards will be new to many people, the following brief description of how they may be made by any careful workman may not be amiss:

Take a pane of heavy glass, the size desired, lay it flat on a table, and with good quality of fine emery dust mixed with a pure thin oil scrub it all over so as to cut the surface evenly, completely, but lightly. Some skill will be required to do this, but no one ought to fail. Some time will be required, and a good deal of labor to prepare the surface satisfactorily. When this is done roughen the back side slightly in the same way and paint it the color desired.

Set the glass with the painted side against the wall as slate is set, leaving the finely and carefully cut surface on the outside for the crayon and the board is ready. It is almost unnecessary to say that the color on the back side seems to be a part of the glass itself. Such a blackboard can be washed or scrubbed without damage, and will absorb neither oil from the hands of the children nor water from a sponge. If made well it will cut the chalk readily, will show a good mark, may be easily cleaned, and it improves with use. Glass blackboards are the most sanitary boards thus far devised, and of course will last indefinitely unless broken by accident.

Drinking fountains.—Various kinds of sanitary drinking cups and drinking fountains were on exhibition. In addition to those forms generally known and of proved value, there was a new device for sterilizing drinking cups. This consisted of four aluminum cups so connected with a machine that while one cup is filling, another is sterilized by an alcohol flame, so that while the same cups are used again and again, there is no need of anyone drinking from a cup that has not been thoroughly sterilized. This device, while it offers an opportunity for complete sterilization, is neither practicable for ordinary school systems nor absolutely safe, for there is nothing to prevent one child from drinking a part of the water from a cup and then passing it to another. Besides, it is an expensive apparatus, and likely to be very troublesome for children to manipulate.

Many varieties of sanitary paper drinking cups were shown, accompanied by convenient devices for holding them. These are both sanitary and inexpensive, but nothing of this kind is likely to prove satisfactory where large numbers of school children must drink quickly and safely. Paper cups are especially valuable in hotels, railway trains, and other public places where it is impracticable, for one reason or another, to use bubbling fountains. They will not

prove satisfactory for large schools, and especially for the primary grades.

Several types of bubbling fountains in connection with ordinary water jars, or coolers, have been manufactured for use in rural schools, where waterworks systems are not found, or even where a pressure tank is not used. Two kinds of such fountains were on exhibition. These will prove very helpful to country and village schools, and deserve the attention of all who are seeking to avoid the menace of dirty buckets and common drinking cups.

There were two exhibits of paper towels for use in schools and in public places generally. The use of these towels will greatly simplify the problems of cleanliness and prevent the possibility of the spread of eye or skin diseases. They are put up on rollers and in pads, so that they may be used economically and with perfect cleanliness. Where carefully supervised, and where the children are taught to use them properly, they have proved acceptable and have brought great relief from the trouble and expense of individual towels. The use of the common roller towel in schools or public places should be forbidden by law everywhere.

Among other materials, devices, etc., included in the exhibition, which have a bearing on school sanitation, may be mentioned a new material for flooring, made by a New York concern. In appearance it resembles artificial stone, but it is of light weight, comparatively noiseless, nonabsorbent, and, it is claimed, is not a rapid heat absorber. It is easily cleaned, can be made in several colors, and is thoroughly fireproof. This material deserves the attention of school architects and schoolmen, with especial reference to its use in halls and domestic-science rooms.

The Forsyth Dental Infirmary for Children.—One of the most significant facts connected with the movement for conserving the teeth of children is the founding and endowment at Boston of the Forsyth Dental Infirmary for Children. A beautiful model of the building now under construction at 140 Fenway was exhibited. This institution was founded by John Hamilton Forsyth and Thomas Alexander Forsyth in memory of their brothers, James Bennett and George Henry Forsyth. It was incorporated in 1910, and has an endowment of \$2,000,000.

It will offer opportunity to all deserving children under 16 years of age to obtain freely expert advice and care for their mouths. * * * Its functions will include not only care of the teeth, but also related conditions, including defective palates, adenoids, etc. Much of the work it will be called on to do in its early years will deal with the cure of defects already established. It is expected that, as its scope enlarges, it will have to do in great part with the prevention of defects by oral prophylaxis.

Apart from the actual work on mouths, it is expected to furnish valuable practical teaching in oral hygiene. Just as the sanatoria for the cure of tuberculosis have served

as centers for the dissemination of wisdom concerning personal hygiene by the example and teaching of their patients, so it is expected that this institution will promote public education in not only oral, but also general hygiene.

Provision has been made for research. A research fellowship has been established and is now held by a man selected for his fitness. The laboratory will be so equipped as to offer opportunity under expert supervision for special work in research by men who desire to do this work.

The museum of the institution, it is hoped, will be a depository for materials of every kind which can be used for the teaching of oral hygiene. The lecture room will be used for the education of the public in dental matters.

The building is to be a model in all those things which will insure hygienic conditions for operators, research workers, and the children.

Dental clinic.—A fully equipped dental clinic was a feature of the exhibit, and dentists were in attendance, busily examining the mouths of children. The object was to show the method of making an examination of the teeth of children in the public schools, and of keeping a record of the same. The examinations were made in an aseptic manner, the only instruments being a bit of wood of suitable size and shape, which was used but once, and a mouth mirror which was carefully sterilized by the assistant after each examination; the hands of the operator never touched the child. It was designed to call attention to the importance of the examination of the mouths of school children, as it is recognized at the present time that a large number of the general infections result from neglected mouth conditions. An operative clinic in connection with the examining clinic was conducted simply as a demonstration of the methods of working for school children from charts after the examinations had been made. It may be interesting to state that the operators obtained their material—children—through the cooperation of the Associated Charities, and they could have had an almost unlimited amount of material, the conditions were found to be so distressing.

Charts were conspicuously displayed bearing inscriptions such as these:

The temporary set of teeth is equally as important as the permanent set. Childhood is the growing period, when the body should receive the maximum of nutrition. Food can not nourish unless properly masticated and prepared for absorption.

The child who has defective teeth is more easily a prey to all infectious diseases.

Spiral fire escape.—An interesting exhibit was a model of a spiral fire escape in which, to the delectation of visitors, china dolls were sent safely down from imaginary tall buildings. The essentials of this fire escape consist of a large steel cylinder with a spiral slide securely fastened to the sides and to the central axis. From each floor of the building to be protected there is a metal runway from the building to an opening into the spiral. When, therefore, the fire escape is to be used, the children march out and jump into the spiral, feet foremost, and gravity does the rest. The danger from clogging

the spiral is negligible, and the danger from landing below is very slight. It is to be hoped, however, that fire escapes *per se* will soon be useless, for there is now no excuse for the construction of non-fireproof buildings for school purposes, especially in cities.

The dust problem.—Most people know in a general way that it is unwholesome to breathe dust, whether it is found in the air in buildings or outside, for dust particles are not only deleterious in themselves by irritating and loading the mucous membranes of the air passages, but they carry with them great numbers of bacteria, pathogenic and nonpathogenic. The problem, then, of clean air is closely linked to the problem of ventilation, as well as to that of general sanitation.

One of the hard problems in school sanitation in cities has been that of ridding the air of dust and soot before it is introduced into the schoolroom. It will not be such a difficult problem to keep the air of school buildings free from dust if the janitor is able to take from the floor most of the dust carried in by the children before it is lifted into the air.

There was demonstrated at the exhibition a type of oil brush that may be used to sweep all kinds of floors. The brush is fitted with a reservoir containing plain kerosene oil. When the brush is properly used the light row of center tufts on the brush is kept just moist enough with the kerosene to dampen the dust and roll it together, but not to oil the floor. The brushes are made in numerous styles and sizes. They are already in practical use in many schools in the West and in some of the public buildings at Washington. Such a brush deserves careful consideration, especially by country and village school officials, where muddy shoes are so common and where dust is consequently a serious problem within the room.

Several varieties of sweeping compounds designed to gather and hold the dust when floors are swept were exhibited. These are on the market and need no special mention here. A good quality of sawdust moistened with paraffin oil is a good substitute for these compounds, though some of the preparations on the market have advantages in holding the dust, and they are not prohibitively expensive. Experiments made with such a compound by Dr. Alvin Davison, professor of biology at Lafayette College, proves its use in gathering up germs. He says, in a pamphlet on "Dust as a Carrier of Disease in the Schoolroom," that "in sweeping an ordinary schoolroom the preparation used was able to catch and hold fast more than a hundred million germs."

For floors and walls there were mops, cloths, and brushes impregnated with a chemical which causes them to catch and hold the dust. These mops, cloths, and brushes are washable after use, and when thus cleaned can be used repeatedly. Many of them are particularly

useful for schools. In this connection may be mentioned the janitor-size handle duster for cleaning walls.

All of these are much more efficient than damp cloths or any ordinary dust cloths. They, of course, are as applicable to home use as to school use. It will be worth the while of school men to examine these brushes and test them by the actual and regular work set for their janitors.

A very instructive exhibit by the Massachusetts State Board of Health showed specimens of dust taken from machines operated by workmen and gave a vivid suggestion of how the lungs of workmen are exposed to all sorts of irritation and unwholesome conditions. This exhibit showed 20 varieties of dangerous dusts. Among these were noted: Dust from raw cotton, this dust being carried from the field from the time it is picked until it reaches the mill; jute fiber dust, broom-corn fiber dust, rattan dust, celluloid dust, dust from fur, and from various stages in the manufacture of leather and many other commodities.

Photographs were exhibited showing many ingenious devices to prevent the entrance of dust with the inspired breath. Not only must the dust be drawn from the rooms by exhaust fans to make some manufacturing industries safe, but the eyes of the workmen must be protected by strong glasses, and they must breathe through various forms of protecting absorbents to avoid the dangers of noxious fumes and deleterious gases. Progress in controlling "industrial dust" was shown in many exhibits, and this augurs well for better care of the workers of the future.

Cleaning and humidifying the air.—A complete air-washing and humidifying device was exhibited, the essentials of which are as follows:

The air to be used in the school building or manufacturing establishment is drawn through a chamber in which a battery of spraying nozzles are situated. These sprays are so set, so constructed, and operated that the water is broken into a fine mist and driven directly into the teeth of the incoming current of air. As a result, the dust particles in the air are laden with moisture and the space between the gaseous atoms composing the air, filled with moisture; or, in common parlance, the air is completely saturated. The air then strikes a system of zigzag eliminator plates set vertically, over which sheets of water flow. The moisture-laden dust is caught by these streams of water and carried into a settling tank below, or directly to a waste water pipe. The saturated, washed air is then heated, if heat is required, or in warm weather driven directly into the rooms. The controlling devices for regulating the temperature of the water in the spraying nozzles, and the temperature of the air driven into the rooms, are essential elements in regulating the percentage of sat-

ration. Excellent results may be expected where such machines are properly installed and operated. One practical difficulty is suggested, however, and that is that a machine as carefully planned and built as this requires skill and brains on the part of the operator in order to obtain the best results. The ordinary school janitor is not competent to handle it and keep it working as it should and would with more intelligent supervision. This difficulty, however, is due to the fact that our general janitor service is at fault. The janitor of a modern up-to-date school must be trained to work with modern machinery, if school sanitation is to keep pace with the demands of health conditions. Business concerns put such machinery under the control of trained engineers.

If school buildings in cities could be removed from the smoke and dust zone and placed in large grounds, there would be less need of washing the air. But the need for humidifying the air in cold climates is generally recognized by all students of school hygiene.

Schoolrooms where dry air is troublesome will be able to relieve this dryness somewhat by the use of a device in the exhibition consisting of a wheel-shaped affair made with crossed porous tubes attached to an ordinary electric fan. The tubes as exhibited were fed with a fragrant compound of oil of pine needles, oil of sweet birch, oil of sandalwood, and eucalyptol. This gave a delightfully refreshing odor and added some moisture to the air. They could be made larger and set in a hot-air chamber and fed with water. This device has been in use in Germany for a number of years. It is not claimed that the apparatus will properly humidify the air; it will, however, alleviate to some degree the conditions in a schoolroom where the air is dry and malodorous.

Sanitary toilets.—It is almost futile to have clean schoolrooms, sanitary drinking fountains, and the other modern means of preserving the health of the child in school unless equally great attention is paid to the sanitation of the school toilet, whether in the building or out of doors. In the first place the lesson of contamination needs to be continually driven home. Early life is intricately bound up with it, and unless we teach the children of to-day what is wrong with most of our sanitary arrangements, and how they can be made right, the parents of to-morrow will be as much at fault as we are to-day.

The accompanying illustration of a model exhibited by the United States Public Health Service shows as simply as is possible what happens in too many instances on school grounds or on the farm. The scene is a typical attractive farmhouse, but the modeler for our purpose has cut away the earth which hides from us the unpleasant underside of the picture. The well is bored deep—there can be no complaint on that score. The arrangement of the strata, however,

BUREAU OF EDUCATION.

BULLETIN, 1913, NO. 18



MODEL SHOWING WELL POLLUTION.

tells the story of contamination. From the privy the waste oozes through the porous layer into the fissured rock. Through these fissures it goes until it strikes the layer of impermeable clay between the rock and water-bearing strata. Not being able to get through the clay, it follows the slope and soon reaches the well bore. On the other side of the well the waste from the stable penetrates similarly the porous layer and works down through the fissures in the rock until it too finds a resting place in the already contaminated well.

The problem of the farm and school privy, therefore, is one of arresting the waste before it can get into the ground and contaminate the soil and the water supply. How much can be done to remedy the usual bad condition by making certain changes in the sanitary arrangements of the old-fashioned closet is seldom realized.

The United States Public Health Service showed a number of models of sanitary privies that are a striking contrast to the typical school and farm building. These privies are, first of all, properly ventilated, in forcible contrast to the prevailing type, and the openings to provide ventilation are carefully screened. The waste matter, instead of entering the ground on its journey to some well or spring in the vicinity, is caught in a sanitary container, where it can be easily treated to remove the great mass of objectionable matter.

The L. R. S. privy was shown, the principle of which is as follows: The solid matter is liquefied, and the liquid that issues from the container is of small volume, very much less dangerous to health, and can be easily sterilized if desired. The construction of this privy is not expensive, and it can be built to serve any country school. An account of sanitary privies, with illustrations, may be found in Bulletin No. 37, 1910, of the United States Public Health Service, and may be had from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 5 cents.

School desks.—The proper adjustment of school desks is still a problem, as the ideal hygiene school desk has yet to be made. In addition to a number of the usual styles of school desks, a special desk for crippled or abnormal children was displayed. The chair accompanying this desk has an adjustable sloping back, and the desk itself is adjustable to different heights. A special feature of the adjustable chair seat for crippled children is the hinged section, which remains up or down according to the needs of the child; that is to say, if the child has a stiff leg, the seat may be adjusted to its support without discomfort to the child. Several examples of movable seats were shown, and a special plea was made in connection with this exhibit for this type of seat. Attention was called to the danger of forcing pupils to sit at a fixed desk of specific size. The literature

distributed by the exhibitors quotes Dr. Montessori to the following effect:

The principal modification in the matter of school furnishings is the abolition of desks and benches or stationary chairs.

I know the first objection which will present itself to the minds of persons accustomed to the old-time methods of discipline—the children in these schools moving about, will overturn the little tables and chairs, producing noise and disorder—but this is a prejudice which has long existed in the minds of those dealing with little children, and for which there is no real foundation.

Swaddling clothes have for many centuries been considered necessary to the new-born babe, walking chairs to the child who is learning to walk. So in the school we still believe it necessary to have heavy desks and chairs fastened to the floor. All these things are based upon the idea that the child should grow in immobility, and upon the strange prejudice that, in order to execute any educational movement, we must maintain a special position of the body.

HYGIENE AND TUBERCULOSIS.

The health authorities of New York City are undertaking an almost superhuman task in attempting to check the ravages of pulmonary tuberculosis. Without going into the details of the plan presented as a part of their health exhibit, excerpts from one of the Monograph Series (No. I, February, 1912), published by the department of health, and reprinted in the appendix to this paper (p. 40), will give some idea of the extent of the educational work of the department in teaching the people how to prevent infection and how to undertake to effect a cure when infected. These directions are worth the careful consideration of teachers, health authorities, and all others who are striving to conquer the "Great White Plague."

The value of pure air.—In all the exhibits relating to the newer and better school buildings of the country, a noticeable improvement was evident in methods of construction and equipment with reference to ventilation. All large city school buildings recently constructed are equipped with the plenum system of ventilation. This means that fresh air is forced into these buildings by a fan system so installed and so regulated as to furnish to each child a sufficient supply of pure air. Because many plenum and other systems of ventilation have been erroneously installed and poorly operated in modern school buildings in the past few years, some school men have hastily concluded that we are proceeding on the wrong method, and have condemned without due consideration.

The chief cause for this complaint is the attempt to furnish sufficient air with a fan or fans too small to do the work expected of them. It is false economy to install fans requiring a maximum speed to furnish the quantity of air required. The ducts to carry the air

to and from the schoolrooms should be ample to insure sufficient movement of the air to keep all parts of each room well ventilated. It was interesting to note in the large exhibits of up-to-date manufacturing establishments that inadequacy in these respects was generally avoided, for it has been learned that economy in operation is always conserved by the use of machinery whose maximum power is always far beyond the ordinary requirements. Where many people work, for many consecutive hours during cold weather, in tight, well-constructed buildings, no other system of ventilation has been devised which gives as good results as the plenum system, aided by an exhaust fan or some other method of artificially creating a draft in the outlet ducts. In practically all of the manufacturing industries where pure air for the workers means better work and a larger output, the ventilation furnished is more nearly adequate to the needs of good health than in our best schools. False economy in factories shows in dollars and cents; in schools the direct economic bearing of bad air is not so readily seen, but the bills are finally paid in health and life.

Open-air schools and open-air sleeping rooms.—The movement for open-air schools is directly traceable to the recuperative effect of outdoor air on sick children and adults. It was to be expected, therefore, that the exhibits of hospitals and sanitariums, especially those designed for the care of tuberculous patients, would show the greatest progress in this direction, and that schools for defective and anemic children should show more provision for outdoor classrooms than schools for normal and healthy children. But the fact that the effect of preaching the gospel of fresh air and of the out-of-doors was shown in all such buildings is a very hopeful sign. Moreover, the movement is spreading to the homes, the shops, and especially to those industrial and financial organizations which count the health and welfare of their workmen as a financial asset. It marked a new era in educational hygiene when insurance companies found that it would be profitable for them to teach their policy holders not only to keep themselves well and thus prolong their lives, but also to keep their families well and happy, and thus indirectly to make the payment of premiums more regular and certain. In one of the beautifully printed booklets exhibited by a manufacturing establishment, photographic illustrations were shown of methods of constructing outdoor sleeping rooms, and were accompanied by such legends as these:

Plenty of good fresh air will make the fires of life and health burn brighter; therefore do not hibernate—ventilate.

If you can't work outdoors, sleep outdoors.

The only night air that is injurious is last night's.

A life insurance company showed a model of its sanitarium where consumptives are treated. In connection with this model placards were exhibited saying:

When a consumptive can not be sent to a sanitarium, arrangements for taking the cure at home should be made as soon as the disease is discovered.

Sleep with your windows open. Do not be afraid of night air. Do not be afraid of cold air.

Do not live in a room where there is no fresh air. Do not work in a room where there is no fresh air. Do not sleep in a room where there is no fresh air.

Consumption is a preventable disease; it is a curable disease.

Sunlight and fresh air kill tuberculosis germs.

This sanitarium was constructed for the cure of clerks and those who have developed tuberculosis while in the service of the company. There are 415 acres included in the sanitarium grounds. The buildings are fireproof throughout, and are designed to accommodate 200 patients. It is planned to have also an extensive garden in connection with it, where fresh farm products can be utilized for food, and where helpful outdoor work for the patients may be obtained. It is needless to say that in the buildings open-air sleeping rooms and opportunities for open-air exercise and recreation have received paramount attention.

The same company, in connection with its exhibits, distributed an illustrated pamphlet with the title, *Directions for living and sleeping in the open air*. On the bottom of the outside cover, it was stated that this was "issued for the use of policy holders." This pamphlet was prepared for the company by Dr. Thomas S. Carrington, assistant secretary of the National Association for the Study and Prevention of Tuberculosis. It is an educational document, pure and simple, written by an eminent specialist and illustrated in such a way as to help anyone in the construction and equipment of open-air sleeping rooms. It is barely possible that this company had in mind to do a general social service by the publication of this pamphlet; but it is practically certain that it would not have been printed had they not realized that it would serve to teach their policy holders and all others who read it that sleeping in the open air will insure better health and longer lives and in the end prove a good investment for all concerned. Such educational work pays, and business corporations are not slow to take advantage of the commercial aspects of good health. This kind of "enlightened selfishness" is a sort to which no worker can object, for it helps both capital and labor and harms neither. It approximates a phase of practical ethics which suggests a basis for a larger common understanding.

This same company has established a visiting nurse service for its sick industrial policy holders. While of course such service is

expected to aid directly in helping to save the lives of these policy holders, the real aim and purpose of this service is educational. The significant remark made about the value of the nurse in the printed matter is this:

It is sufficient for the purpose of the company to realize that the work of a nurse is part of an educational propaganda, and that in the long run her services must redound to the general benefit and welfare of the policy holders. There can be little doubt, however, that in time strong evidence will be forthcoming of a considerable improvement in the mortality of policy holders. * * * As a matter of interest, it may be noted that at the end of June, 1912, the nursing service experiment was being conducted in approximately 1,104 cities and towns in the United States and Canada, and for the year 1912 it is conservatively estimated that a total of 1,000,000 visits will be made to policy holders of the company at a total cost of \$500,000.

It would be a dull mind indeed which could not see that such activity as this, duplicated in its general purposes and work by numerous other business concerns, represents a new phase of educational service to the whole nation. It matters not who does the teaching so long as it is done effectively and purposefully.

In the exhibit of Cleveland, Ohio, showing the "Cooley Farms," there was a plaster cast model of a 500-acre farm for a tuberculosis sanitarium to cost \$500,000, as well as of a colony farm of 500 acres for an infirmary or almshouse. In the exhibit a placard stated that 2,000 acres of land furnished opportunity for 8,000 prisoners to work in the open fields, without lock or bar. "The open sky is better than the dark cell." These facts remind us again that we are giving relatively more attention to those who have gone wrong than we are giving to those who have not yet gone wrong, and will not go wrong if they have the opportunity of decent treatment and decent development. It seems unfortunate that our minds, even in exhibitions on hygiene, have been concentrated on cure instead of on prevention. Still, the fact that authorities are realizing that the open air and the sky and employment will reconstruct body and soul of both the sick and the criminal has for us the lesson so often taught of late, that fresh air, sunshine, and congenial wholesome employment offer the biggest developmental opportunity any man needs.

In order to see how the cities in the northeastern section of the country are undertaking to meet the difficult health situations brought about by the great influx of population from foreign countries and congestion of the population, one only needed to read a card posted by the Rochester (N. Y.) Public Health Association, showing the age, sex, nationality, and diagnosis of the children who were gathered in their open-air schools which were started July 4, 1912. The chart here follows.

CONGRESS ON HYGIENE AND DEMOGRAPHY.

Open-air school, Rochester, N. Y.

Age.	Sex.	Nationality.	Diagnosis.
5	Female.	Italian.	Tuberculosis.
9	Do.	German.	Do.
12	Male.	Do.	Do.
10	Female.	Italian.	Do.
9	Do.	Hebrew.	Do.
12	Do.	Italian.	Do.
9	Male.	Do.	Do.
6	Do.	American.	Do.
16	Do.	Irish.	Do.
8	Do.	American.	Do.
16	Do.	Italian.	Do.
6	Female.	Hebrew.	Do.
12	Do.	Italian.	Do.
9	Do.	Hebrew.	Do.
7	Do.	Do.	Do.
8	Male.	American.	Do.
6	Female.	Irish.	Do.
11	Do.	English.	Do.
12	Male.	Hebrew.	Do.
10	Female.	American.	Do.
9	Do.	German.	Do.
5	Do.	Hebrew.	Do.
8	Do.	Irish.	Do.
12	Do.	Italian.	Do.
8	Male.	Do.	Do.
8	Do.	Hebrew.	Do.

Boy Scouts.—The exhibit of the Boy Scouts consisted chiefly of photographs of boys on the trail, in camp, fishing, signaling, drilling, and the general opportunities they have in their "hikes" for coming in contact with nature and trying to make themselves comfortable and happy under various conditions. Other photographs show them exercising, swimming, boating, and at lectures on "first aid," studying trees, and in general trying to adapt themselves to nature and make the most of situations away from the hurry of the crowd. The great expansion of this movement in the last few years has been one of the wonders of organization. Whether or not this will degenerate into a sort of semipreparation for war, one can not say, but at present it is doing enormous good in taking boys out of the cities and giving them a breath of fresh air, and bringing them in contact with nature in its various moods and conditions. Without such an organization as this, many boys would never get the opportunity thus given for journeys into the country to test their own strength and develop their own power.

Tom Sawyer was a philosopher, and knew how to get other boys to do his work if only in some way he could get those boys to imagine that it was play and not work.

The Kansas Boy Scouts have organized an antify campaign under the guise of uniform and military tactics and the other little folderol of organization. Wise heads have directed their energy and strength to cleaning up back yards, dirty streets, and setting an example before older people of cleanliness and all that is associated with it.

INDUSTRIAL HYGIENE.

Without doubt one of the most encouraging signs of progress in hygienic living was that shown by the rapid development of methods of protecting workmen from what are known as occupational diseases. Knowledge of the laws of health and of the economic value of health is slowly but surely revolutionizing the attitude of manufacturers toward their employees. Due to the fact that good health is now being valued as an economical asset, not only by the workman but also by the employer of labor, it is no longer a mere matter of humanitarian sympathy to furnish fresh, clean air, good light, and safe environment to workmen; it also pays. Perhaps no phase of hygienic science received, on the whole, so much attention in the exhibition as this. At first glance it may seem to indicate low ethical standards of our people to find that better health conditions are often contingent on mere economic considerations. But on closer analysis, one is inclined to believe that this is in the direction of a higher form of ethics. The fundamental principle everywhere exhibited in society, which demands returns comparable to the science and skill involved in the labor, is finding a new exemplification in the economic value of good health and congenial environment.

It is one-sided ethics to give without the expectation of some form of return. True, the highest form of return in many undertakings is not measurable by economic standards; but business life must be so measured, else it could not be maintained or developed. Where the demands of the workman for wholesome conditions are seen to be not only consistent with his own welfare and happiness but likewise compatible with the economic success of employers, then a higher and safer plane has been reached and the dangers of dissatisfaction and misunderstandings lessened.

Laundry workers are now relieved from excessive steam and humidity in the workrooms. This is done by the plenum and exhaust-fan system, which not only furnishes fresh air but removes the steam and undue humidity from the air. The exhibition on the cotton industry showed wonderful progress in the way of removing lint from the air and in humidifying and ventilating. In the best woolen mills, where workers are exposed to infection and the inhalation of shreds of fiber, the lighting and ventilation and cleanliness are being looked after with great care. There was also a great mass of photographs showing factories with ideal sanitary conditions, and some showing bad conditions and ineffective apparatus.

One of the striking features of modern factory life is the rapid development of life-saving through better ventilation. In all phases of manufacturing where dust and bits of metal or glass are likely to be scattered through the air, and thereby injure the health

of the workmen, the fan system of furnishing fresh air and exhausting the dust is bringing much relief. This method was shown in the manufacture of cut glass and photo-engraving by fan systems for exhausting the fumes and other deleterious substances released by chemical or other processes. The composing rooms of newspapers, whether in the basement or in the attic, are now ventilated and purified, not only as a means of saving the lives of the workmen, but from an economical point of view; it has been found that workmen will do better work and more work under these conditions than under insanitary conditions of the air. Even in those manufacturing establishments where comparatively little dust is released, but where many people are at work, the air is purified in winter by means of forced ventilation, and in summer large windows furnish abundant fresh air.

The industrial diseases reported to the State department of labor for the first nine months of 1911, under New York reporting laws, show a total of 146 cases, lead poison leading all others, with caisson disease second.

The best department stores throughout the country are seriously engaged in furnishing to their salesmen and women good air, rest rooms, sanitary toilets, ventilated locker rooms, sanitary drinking fountains, emergency hospitals for women; and instruments have been designed for analyzing air in various workshops and mercantile establishments. Rogers's apparatus for determining carbonic acid (CO_2) was on exhibition in connection with the display of mercantile and manufacturing establishments.

A large and well-known manufacturing company exhibited its care for the health of its employees by illustrated lectures on digestion, personal hygiene, circulation, respiration, effects of narcotics, housing conditions, tuberculosis, venereal diseases, and campaigns against the fly. It attempts to improve its shop conditions by special cleanliness, systematic disinfection, and perfect ventilation. It furnishes baths for all its employees, and maintains a sanitary barber shop. Clean aprons and sleevelets are provided, also individual towels, combs, and brushes, the latter being sterilized daily. It employs a factory physician who makes a physical examination of all employees; an oculist who looks after the eyes of the workmen; trained nurses to care for the sick and advise those who are in need of their services. It provides an emergency hospital and ambulances. It has organized relief associations, and changes the occupations of the workmen in order to help them maintain their health.

One cabinet of this exhibit was devoted to the importance of air and light. Prominent among the placards in this cabinet were the following:

Don't sleep where there is no fresh air; don't work where there is no fresh air; don't live where there is no fresh air.

The trouble is that people do not allow enough fresh air and enough sunlight into their rooms.

Consumption causes more deaths than any other disease. Nearly one-third of all the people that die between 20 and 45 years of age die of consumption.

Consumption is caused by the dust from dry spit. Don't spit on stairs. Don't spit on sidewalks.

The germs of tuberculosis enter the living body through the lungs and mouth by breathing; also by infected food.

The only consumptive to be afraid of is the careless consumptive. He coughs and spits anywhere and everywhere; he is a danger to the neighborhood.

Alcoholic drinks are particularly bad for persons suffering from consumption. They don't cure, they kill.

A large number of beautifully colored photographs of interiors of workrooms and machine shops, showing abundance of good light, were exhibited. The grounds about the buildings are kept clean and are beautified with vines and flowers. One placard stated that four-fifths of the buildings are glass, thus giving ample opportunity for sunshine and fresh air. Air, light, water, food, and exercise are mentioned as the essentials of hygiene in connection with its industry. Fresh air is furnished by means of forced ventilation, taking the air from above the buildings and forcing it into the rooms by means of fans. Foul air is also drawn out through the wall by ventilators and exhaust fans. All air in the buildings is changed every 15 minutes. The buildings are removed from other buildings, so that there is air space between them all, and to prevent contamination of the air 160 acres of park land separate the buildings from other structures. Light is furnished through windows aggregating four-fifths of the wall space of all the buildings. The buildings are painted a soft color, so that the glare will not weary the eyes.

Sanitary drinking cups, sanitary drinking fountains, and distilled and aerated water are used, and no ice comes in contact with the drinking water. In the food department there are sanitary kitchens, a cold-storage plant, and specially trained waiters who are required to take every precaution to prevent contamination of foods. To furnish proper exercise there are gymnasiums, a country club, horse riding, baseball diamond, tennis courts, golf clubs, a cross-country walking club, and ample playgrounds. For women, morning and afternoon recesses.

Truly, such a program as this reads as if it were made for a special school of sanitary living, and in reality it is such. But primarily it was developed as a business proposition. The company has found that good health among its workers is one of its most valuable

assets, and that every precaution it can take to guard them from accident or disease is money well spent. It has also discovered that recreation and fun constitute a vital part of a man's needs, and that it pays for a manufacturer to make provision for this phase of the life of workers.

NOURISHMENT OF CHILDREN.

American custom has not yet sanctioned many health measures by the city and State that more paternal Governments have long put into effect. Most suggestions for direct supervision of the nourishment of school children in this country are generally frowned upon by educators and the public alike. At the same time, it is safe to say that American teachers have not begun to do as much in an advisory way toward solving the problem of malnutrition as they can do. Some of the points upon which the teacher can give very definite instruction were shown interestingly in the exhibit.

First of all, in a great number of the exhibits, emphasis was placed on the necessity for proper infant feeding. After the child becomes of school age, the teacher becomes in a sense the most important supervisor of the health of the children. The ill effects of insufficient or improper nourishment, which may not always show when the child is at play in the house or out of doors, are revealed directly to the teacher during the school session. Inattention, apparent dullness, and all the various irregularities that come from lack of nutrition reveal themselves to the practiced teacher.

The importance of the cleanliness of purchased products was also strikingly emphasized. If a child can be taught to understand the risk of unclean markets, he will impart this information to the parents. This is particularly important in the case of large cities having an alien population. As an example of what may be done in teaching the significance of cleanliness in the sale of groceries and similar goods, an exhibit by the market committee of the Women's Municipal League of Boston may be taken. On one side of an aisle was a model of a small city grocery and vegetable stand of the undesirable sort. The potatoes, cabbages, turnips, and onions all mingled together in dirty boxes, with a not-too-clean fox terrier standing guard over them; a rough-board table with a pile of nondescript bread, cakes, crackers, and rolls, flanked by more vegetables, and some canned goods in decidedly unattractive cans, with a cat, that notorious carrier of germs, seated in the midst. Flies were omnipresent, and the proprietor's coat was ready to be thrown over this food supply in case of rain.

On the other side was a clean market, amply protected from dust and flies. The bread was wrapped in sealed wrappers; the cakes and

rolls were under glass covers; the groceries were all kept separate and distinct in glass compartments; and the whole environment clean and inviting, with little added expense.

The whole purpose of this exhibit was to show those who ought to know the importance of the scrupulous care of food products for household consumption. The successful accomplishment of this represents one of the first and most needed steps in providing proper food for children.

The Women's Municipal League of Boston also exhibited a model of a play grocery shop of the better type, which is carried from one social settlement house to another. The children play in it, and through it are taught the value of orderliness and cleanliness. This shop as shown was inexpensive to equip, and for the few dollars outlay necessary almost any community could demonstrate to its children, and through them teach the parents and dealers themselves, the ease with which cleanliness can be obtained.

In this same connection the New York association for improving the condition of the poor demonstrated in an interesting fashion what can be done in providing wholesome and economical meals for school children. Six prepared meals were shown in models. The first three represented what the school child was fed by the parents before they had instruction in food values. The second three showed the meals provided by the parents after they knew what to give their children. If every teacher could see these two varieties and could impress in this objective way the children or their parents with the importance of the difference between the two, there would be fewer ill-nourished and underfed school children to dawdle away their time because of insufficient energy at command.

The following are the menus:

Before instruction.

Breakfast: Coffee with milk and sugar, cruller, and sugared bun.

Lunch: Coffee with milk and sugar, bread and butter, cruller, and slice of ham.

Dinner: Coffee with milk and sugar, bread and butter, bologna, pickle, piece of pie, and dish of sliced bananas.

After instruction.

Breakfast: Chocolate, bowl of cereal, pitcher of milk, whole-wheat bread, dish of prunes.

Lunch: Glass of milk, bowl of soup, bread and butter, homemade cookies.

Dinner: Lamb chop, bread and butter, spinach with egg, boiled potato, dish of bananas.

In connection with this exhibit, pictures were shown of actual scenes wherein the New York association is teaching 50,000 little mothers how to cook and manage other household duties. Photographs of children properly nourished and of those improperly nourished were displayed.

In many departments of the exhibition a great many charts and illustrative materials showing the value of the proper feeding of infants were exhibited. The difference between the natural milk for the baby and other forms of food was very strikingly illustrated. One chart from the Department of Agriculture, Bureau of Chemistry, showing the composition of foods for infants, made it very clear that no prepared food even approximated the natural breast food in its composition and proportion; cow's milk and goat's milk are far more nearly like natural human milk than any of the prepared foods on the market. Other charts showed food formulas for children of various ages. These exhibits gave a striking illustration of how modern science, worked out patiently in the laboratory, can be and is made of the utmost value in a practical way. Not only has it brought to our attention the great importance of proper diet, but it has put into the hands of the people information through the use of which they can combat nearly all sorts of disease. Those prepared foods, skillfully advertised, making claims of being more useful even than the natural diet of the child, were here shown to be faulty.

The plain lesson taught by all these charts is that the natural life is the sanitary life, and a mother who can not or will not nourish her children in the natural way has at once limited the possibilities of the child not only as to its health but also as to his natural growth and to his general future development.

MENTAL HYGIENE.

The exhibit on mental hygiene was installed through the cooperation of the National Committee for Mental Hygiene (50 Union Square, New York City), the Connecticut Society for Mental Hygiene, the Illinois Society for Mental Hygiene, and the Committee on Mental Hygiene of the New York State Charities Aid Association. The material presented was arranged in six sections. Sections A and B were designed to show the—

incidence of insanity and mental defectiveness in the United States and its significance; some explanation of the apparent increase in insanity; the cost of caring for the insane and the mentally defective; the relation of immigration to the incidence of insanity and mental defectiveness; and the effects upon the community of the uncared-for insane and mentally defective.

Some of the statistics set forth in connection with this section are rather startling. For example, it was stated that on the 1st of January, 1910, there were 187,454 insane persons in institutions in the United States. This number exceeds the number of students who were enrolled in all colleges and universities in this country at that date.

The number of patients in institutions for the insane is increasing at the rate of 6,000 per year. About 30,000 new cases enter our public and private hospitals for the insane each year, and this number must be far below the number that deserve treatment.

The apparent increase in insanity in this country was partly accounted for by the presentation of the following facts:

The average expectation of life is longer by 10 years than it was a century ago, and since insanity is more often found in the middle or later periods of life, there would be, other things equal, relatively more people so afflicted; better standards of care cause more people to seek institutions for relief in the early stages of the disease; conditions now recognized as mental diseases were passed over previously, and those so afflicted were often classed merely as criminals; the death rate in institutions is lower now, hence the number increases. But it can not be denied that of all of the classes of sick people cared for in hospitals the insane is by far the most numerous. The number of beds provided for the insane is in excess of the combined number of beds provided in all other hospitals in the United States.

The estimated cost of caring for the insane in institutions in the United States for the year 1910 was placed at \$32,804,500, and was stated to be about equal to the amount expended yearly in the construction of the Panama Canal. The annual economic loss to the country as a result of this withdrawal of labor was estimated at \$130,000,000. The burden of caring for the insane was strikingly illustrated by figures showing, for example, that in New York State nearly one-fourth (23 per cent) of the entire annual expenditure of State funds was appropriated last year for the care of the insane. Only a little more (24 per cent) was spent for the support of common schools and the educational department.

The general conclusions relating to the effect of immigration on the prevalence of insanity were stated as follows:

That immigration is an important source of insanity in the United States is shown by the fact that although the foreign born constitute but 14.3 per cent of the general population, the foreign-born insane constitute nearly 30 per cent of the insane in institutions, and this, too, despite the fact that all ages are not represented in the foreign-born population, as in the case of the native born. The wise and humane control of immigration with reference to the exclusion of the insane and mentally defective is a pressing need.

In a chart entitled "The children of mentally defective women" it was stated that—

The British Royal Commission reports that the offspring of mentally defective women are twice as numerous as the offspring of normal women.

A helpless, feeble-minded woman is the prey of not one man but of many men. In the foregoing series 20 women bore 60 children by 38 fathers. Practically all such women became mothers soon after reaching the age of puberty, and most of the children of such women are mentally defective or illegitimate, or both. Of the above 60 children 19 were mentally defective and 28 illegitimate.

The unfortunate birth of such children, their helplessness, their pauperism and consequent ruin, are but part of a continuous series whereby the community is constantly supplied with the elements of degeneracy and crime.

Another chart:

The effect of the mentally defective upon a community: Insane father, feeble-minded mother; 7 children, all mentally deficient; 1 under institutional care, 1 married, 3 at almshouse with mother.

Alcoholic father with imbecile brother; alcoholic mother, tuberculous sister; 8 feeble minded children, only 1 under institutional care.

Feeble-minded paternal grandmother, neurotic paternal grandfather, alcoholic father, neurotic mother with "queer" sister; 10 children—8 feeble-minded, 2 uncertain; 1 only under institutional care.

The institution at Vineland, N. J., has a record of 237 similar families. Draw your own conclusions as to the effect of such families upon society and community life. It is known that 25 per cent of all criminals are mentally defective.

In sections C and D material illustrating the different types of the nervous system, from the lower animals to that of man, was exhibited. The purpose of this section was to show the "different levels at which the personality is vulnerable, and to illustrate by the life histories of actual cases of mental disease, and to indicate the way in which adjustment can be interfered with by damage to its mechanism." This last point was illustrated by photographs of the brain and nervous system in various diseased conditions.

In this section emphasis was placed on the fact that the fatalistic attitude of the public toward insanity is not justifiable, for many of the causes are avoidable either by special measures or by strict compliance with the laws of general hygiene. The person who has not made some study of insanity, or who has not been informed by those who have made such a study, is inclined to look upon all insane people as if each were afflicted in the same way. There are, however, many varieties of insanity or insanities, each with its characteristic cause and varying in hopefulness or hopelessness accordingly. The statistics presented showed that about 25 per cent of all who are committed to insane hospitals recover and remain well. About the same number, while not completely cured, are able to return to their homes and take some part in active life.

Section E was devoted to the methods and the results of institutional care of the insane and the mentally defective. The crude and horrible methods formerly used to restrain insane people were exhibited and contrasted with the freedom and lack of restraint to-day. An insane person is now treated as a sick person, and not as one possessed of a devil, as was formerly the case. It was stated that—

The Boston Psychopathic Hospital and the Henry Phipps Psychiatric Clinic of Johns Hopkins University are institutions which represent the most humane idea in the care of mental diseases. Institutions of this character break down the last barrier between the treatment of the insane and the treatment of other classes of the sick.

Section F was devoted to the campaign for mental hygiene in general. The recommendation was made by the national committee for mental hygiene that practical aid in mental hygiene should be given by the universities throughout the country by—

(a) The establishment in all universities of departments for the study of the structure and function of the nervous system in the lower animals, so that the investigator may go from the simpler to the more complex phenomena of behavior.

(b) The study of human psychology on a far broader basis than has yet been attempted.

(c) The establishment of departments of mental hygiene, so the natural capacity and trends of students may be determined in order that their mental health may be protected and their efficiency and chances for success increased by helping them to find the place in the world for which they are best adapted.

The committee further recommended that—

1. More attention should be given to the subject of mental diseases in medical schools, in order that the general practitioners may recognize cases of mental disease early and aid in securing treatment for them.

2. Institutions where early cases of insanity or those in danger of developing mental diseases may secure treatment, such as psychopathic hospitals and special wards or pavilions for the insane in connection with general hospitals, should be established in many cities.

3. Improvement of the standards of nursing the insane should be sought by providing opportunities for training nurses and attendants, together with shorter hours, better wages, and better living conditions for these workers.

4. Alcohol and syphilis, as preventable causes of mental disorders, should be attacked vigorously.

5. The relation of heredity to insanity should be carefully studied.

6. The feeble-minded should be segregated in suitable institutions, so that the jails, almshouses, and hospitals for the insane may be relieved of cases not subject to reform or cure, and that the feeble-minded may be delivered from such unsuitable institutions.

7. Backward children in the public schools should be given a careful mental examination by competent examiners, and so should all juvenile delinquents, in order that these classes of children may be given the right kind of work to do and, if possible, be placed in an environment conducive to their greatest usefulness.

8. The relation of crime to insanity should be studied carefully, so that the legal aspects of the problem may be made to conform more closely to its medical aspects.

An outline of the work of the National Committee for Mental Hygiene was set forth on a chart, as follows:

The National Committee for Mental Hygiene aims to serve as a clearing house for the Nation on the subject of mental health, the prevention of nervous and mental disorders, the care and cure of the insane; and aims also to serve as a coordinating agency for all State and local agencies interested in these problems.

Its activities are as follows:

1. The National Committee for Mental Hygiene is gathering reliable data on mental health, the causes and prevention of nervous and mental disorders, and the care and treatment of the insane, and will publish and keep before the public vital facts regarding these subjects.

2. The National Committee for Mental Hygiene is gathering interesting material for exhibits and lectures on mental hygiene and the care and treatment of the insane, so that interested workers in the several States may show the necessity for concerted action in behalf of the insane and the numerous portion of the public which is in danger of developing mental disorder.

3. The National Committee for Mental Hygiene is enlisting the interest and support of the public, so that all States will grant adequate appropriations for the care of the insane and for the proper management of the problem of mental health in their respective communities.

4. The National Committee for Mental Hygiene is enlisting the support of philanthropists who heretofore, because of the absence of a coordinating agency in this field of endeavor, have found it difficult to help the insane. This will hasten the day when psychopathic hospitals, psychiatric clinics in connection with medical schools, and special wards for the treatment of mental diseases in general hospitals will be established throughout the country and make it possible to treat all cases of incipient mental disorders promptly and with full effect.

5. The National Committee for Mental Hygiene has published a document entitled "Summaries of the laws relating to the commitment and care of the insane in the United States," with a view to securing uniformly good laws in all States, and further as a means of raising the standard of care for the insane throughout the country, it being an accepted fact that States with highly developed systems of care and treatment of the insane also have the best and most complete laws on the subject.

6. The National Committee for Mental Hygiene is studying conditions among the insane in the United States, under the terms of a special gift of \$50,000, for the purpose of ameliorating their condition. In order to achieve this result, plans for improvement, for the use of interested workers in given States who desire disinterested advice regarding their local problems, will be furnished upon application.

7. The National Committee for Mental Hygiene will help to organize State societies for mental hygiene and local committees for mental hygiene throughout the country, so that local conditions may be improved in given States by representative groups of people who are vitally interested in the work and best qualified to manage it.

8. The National Committee for Mental Hygiene is studying the extent and character of the instruction given in medical schools in the United States regarding mental diseases, with a view to having such instruction conform to the importance of this subject, so that physicians generally may be able to recognize cases of incipient mental disorder.

9. The National Committee for Mental Hygiene is studying the relation of immigration to the prevalence of mental diseases and defects, with a view to rendering aid in devising wise and humane methods in controlling the immigration of the insane and mentally defective.

The chief objects, as stated and set forth in a placard, are summarized as follows:

To work for the protection of the mental health of the public; to help raise the standard of care for those threatened with mental disorder or actually ill; to promote the study of mental disorders in all their forms and relations, and to disseminate knowledge concerning their causes, treatment, and prevention. To obtain from every source reliable data regarding conditions and methods of dealing with mental disorders; to enlist the aid of the Federal Government, so far as it may seem desirable; to coordinate existing agencies and help organize in each State in the Union an allied but independent society for mental hygiene, similar to the existing Connecticut Society for Mental Hygiene.

The committee on mental hygiene of the New York State Charities Aid Association offered an interesting exhibition by charts and maps illustrating their method of prevention.

The importance of mental hygiene was emphasized in a series of charts setting forth, among other statements, the following:

Mental hygiene is the study of individuals with a view to determining their natural capacity and trends, then of assisting them first to find, and then to retain, a place in the world for which they are adapted.

A nation's greatness depends upon the efficiency of its citizens; personal efficiency depends upon a healthy brain and nervous system and the organization of sound habits.

Our conduct and thoughts depend upon the capacity of our nervous system. The brain is the individual—by it man lives, moves, and has his being. Education is a process of training the brain and nervous system by study and discipline. The aim of education should be to develop the capacity of these organs to the utmost.

If a training in pedagogics gave teachers a clearer and more practical insight into actual life, as well as some appreciation of the beginning pathological tendencies of humanity, many failures would be avoided and many difficulties would be overcome.

—KRAFFT-EBING.

In the section on the prevention of insanity and mental defectives the Minnesota School for Feeble-Minded and Colony for Epileptics, at Faribault, had an interesting exhibit. A large map was exhibited showing the location of the village community and colonies, consisting of training school, custodial department for women, hospitals, kitchens, colonies for boys, etc. Along with this were numerous photographs of the buildings, grounds, the workshops, library, schools, gymnasiums, recreation halls, etc., showing how much care is being bestowed upon the unfortunates. Here on a farm of 1,038 acres defectives and epileptics are really given a better opportunity for normal living than is very often given to the healthful and more fortunate children of our Nation. From their school work a rather unique exhibit was shown. One of these illustrated the relation of mental age to ability in sewing. For example the work of the normal child of 4 years is taken as a basis, and that of all the defective girls who showed about the same amount of skill and talent, regardless of years, was classified with this. For example, the sewing of a girl of 19 was of such a nature as to make it plain that it is impossible for her to do better handwork than a normal child of 4 years. This line of illustration is used up to the mental age of 8. It is a rather new suggestion and offers opportunity, it seems to me, for a new, even if crude, form of mental measurement. Naturally here, as in all instances where the measurement of the intelligence is undertaken, great care and scientific carefulness must be observed.

In a pamphlet distributed in connection with their exhibit the committee on mental hygiene of the New York Charities' Aid Association sought to answer in a brief way this question: Why should any-

one go insane? Some parts of the answer to this question are here reproduced and deserve careful consideration by all people:

CAUSES OF INSANITY.

1. *Immoral living.*—One kind of insanity is known popularly as "softening of the brain." It is known scientifically as general paralysis, or paresis. It is incurable by any means now known to the medical profession. * * * The very substance of the brain becomes changed. They usually live but a few years. It is now agreed by the medical profession that this disease is caused by an earlier disease known as syphilis. * * * If self-respect, the desire for the good opinion of others, the influence of religious training, and the attractions of home life are not sufficient to prevent this kind of wrong doing, the danger of contracting a disease which may result in incurable insanity should be sufficient.

The number of patients having paresis or "softening of the brain" admitted to State hospitals during the year ending September 30, 1910, was 609 men, or 17 per cent of all men admitted, and 263 women, 8 per cent of all women admitted.

2. *Alcohol and other poisons.*—Another group of mental diseases are due directly to the habitual use of alcohol. Alcoholic insanity may be brought on by the regular use of alcohol, even in "moderate" quantities not producing intoxication. The close relation between alcohol and insanity has only recently been fully realized. * * * Fully 30 per cent of the men and 10 per cent of the women admitted to the State hospitals are suffering from conditions due directly or indirectly to alcohol. So marked is the effect of alcohol upon the brain and the nerve tissue that it helps to bring about a number of mental breakdowns in addition to the alcoholic insanities.

In this day of keen competition every man needs the highest possible development of his mental capacities. Not only is the highest mental development impossible in the presence of the continued use of alcohol, but impairment of the mental faculties is likely to follow. The children of those addicted to alcohol often start in life with morbid tendencies or mental defects.

Other poisons, such as opium, morphine, and cocaine, which, with alcohol, are the principal parts of many patent remedies, often weaken the mental powers and produce insanity.

3. *Physical diseases.*—Some mental breakdowns may be traced to the effects of other physical diseases. Typhoid fever, influenza, diphtheria, and some other diseases often so poison the system that, for some time after the disease itself has left, the regular functions of the body are seriously interfered with.

Overwork is often spoken of as a cause of insanity. This is not correct. Hard work alone rarely causes a nervous breakdown. It only becomes a menace to health when associated with worry and loss of sleep or causes mentioned under other headings.

4. *Mental habits.*—Aside from physical causes there are also mental causes. They are the most important causes of some forms of insanity. The healthy state of mind is one of satisfaction with life. This does not depend so much upon our surroundings or how much money we have or how many troubles come to us, as upon the way in which we train ourselves to deal with difficulties and troubles. * * * Mental health is as important as physical health. The average person little realizes the danger of breeding over slights, injuries, disappointments, or misfortunes, or of lack of frankness, or of an unnatural attitude toward his fellow men, shown by unusual sensitiveness or marked suspicion. Yet all these unwholesome and painful trains of thought may, if persisted in and unrelied by healthy interests and activities, tend toward insanity.

Wholesome work, relieved by periods of rest and simple pleasures, and an interest in the affairs of others are important preventives of unwholesome ways of thinking. * * *

Our remedies oft in ourselves do lie,
Which we ascribe to heaven.

—SHAKESPEARE.

Heredity.—Most persons think that insanity may be directly inherited. This belief is undoubtedly wrong. One may inherit a greater or less tendency toward insanity. Mental instability may be inherited just as weak constitutions may be inherited. * * * The most important fact in heredity is that the vast majority of ancestors of every individual were normal. Heredity tends, therefore, rather more strongly toward health than toward disease.

The fact that heredity plays a part in the causation of insanity should create a public conscience regarding marriage. Marriages should not be contracted by two persons who have insanity or feeble-mindedness in their immediate families without seeking and following the advice of a competent physician.

SEX HYGIENE.

The exhibit which attracted by far more attention than any other presented was that illustrating the effects of venereal diseases and the work and propaganda of the American Society of Sanitary and Moral Prophylaxis. The section on sex hygiene, while described by one speaker as "the hall of horrors," will probably have a more definite and far-reaching educational effect than any other part of the exhibit. In addition to an extensive display of wax models, drawings, charts, and photographs, a dark room in which lectures, illustrated by lantern slides and moving pictures, were given, was in almost constant use throughout the whole exhibition. The great interest displayed in these lectures and the information disseminated in connection with this exhibit furnished striking evidence that at last the awful curse of these diseases is emerging from its veiled secrecy and that the time is rapidly approaching when the generations unborn will be protected from their baneful results.

In the outlines presented, setting forth the general educational propaganda, emphasis was placed on the possibilities of teaching sex hygiene successfully, and with as few complications as possible. The following is the program suggested:

I. The subject of sex hygiene must be taught as one intimately and obviously related to other subjects in the curriculum, such as natural history, biology, etc. To detach the subject of sex, and teach it to young children as an unrelated course, not only is illogical and unscientific, but gives undue prominence in the childish mind.

Instruction must be given in the earliest grades as a part of nature work, and should be carried through the entire social period, its complexity increasing with the growing demands of the child. The child should be encouraged to ask questions and make its own observations.

It naturally follows that the teaching should be accompanied by no more sentimentality or vagueness than any other natural history subject.

II. At an early age a systematic attempt should be made to inculcate in the child a great respect for beauty and for the potential possibilities of the human body, the profound importance of habits, both physical and psychological, and the necessity for a clean, well-developed body for efficient manhood and womanhood.

By the time the child attains puberty, he or she should have a clear general knowledge of the plan of reproduction, gained almost wholly from a study of comparative anatomy in an evolutionary form, from the lowest unicellular type to the complex vertebrates. There should also have been gained by this time a good working vocabulary.

III. Up to the age of puberty it would seem best that sex hygiene should be taught by the regular class teacher, if fitted by nature for the work. Through her personal knowledge of the children, she should be able to distinguish the most precocious, and by aid of the medical inspector or, better, the parents, give the special instruction they demand. She should also be able to distinguish those children who, by reason of heredity or environment, form a species of degenerates, one of whom may exert a most demoralizing influence upon the sex education of an entire classroom. This duty would also obviously necessitate very careful training on the part of the teacher. Such training should, therefore, be an essential part of every normal school and university.

IV. Special care should be given to the peculiar nervous and mental phenomena of the period of puberty. The cooperation of the medical inspector is here most important. Parents should be especially warned of the significance and dangers of this most important phase of all life.

At this time a course in citizenship should be inaugurated, and an attempt made to develop an acute sense of the social and race-consciousness, with the idea of preparing the child for an understanding of the sociological significance of sex.

V. Throughout adolescence the youth is particularly sensitive to psychical and idealistic appeal. In this season, during high school and boarding school, the study of eugenics and heredity should be introduced, special stress being laid upon the responsibility of the present generation for the next, and upon the rights of the unborn. The relation of sex to all creative art, such as painting, music, and poetry, should also be made clear.

At the same time, the youth, male or female, is old enough now, in the latter half of his high-school course, to assimilate a more technical study of the physiology of reproduction, the dangers of precocity along certain lines, of masturbation, and of the venereal diseases. To both boys and girls should be given a thorough course in the physiology and hygiene of menstruation. All of this advanced instruction would gain authority and dignity if given by well-trained men and women of the medical profession.

VI. In the attempt, however intelligent, to deal with the sex education of children the teacher can not hope to meet with the desired results unless the parents will cooperate with the schools.

To convince the parents of the necessity of such instruction, every means should be taken to arouse them to an appreciation of existing conditions.

To this end, prepared lectures and demonstrations should be given them through the school centers, through parents' associations, and through women's clubs, where prepared literature may also be distributed.

The detailed outlines presented, setting forth a course of work for teaching sex hygiene, were in part as follows:

EARLY ADOLESCENCE (AGE 12-16 YEARS).

I. Nature Study and Biology:

1. Further study of reproduction in plants.
2. Reproduction in the lower forms of animal life.
 - (a) Species in which the care of the young is absent.
 - (b) Those in which love and care of the offspring is evident.
 - (c) Significance of parental love in animal life.
 - (d) The mating of animals and its relation to the care of the young.
 - (e) The higher the animal in scale of life, the greater the helplessness at birth and the more love and care needed.
 - (f) The human body the most helpless of all animals, needing the greatest love and the longest parental protection and care.

II. Adolescent Love:

1. Its influence, if properly directed and controlled, can not fail of good.
2. It should be studied as portrayed in the works of the great literary artists in poetry and the novel.
3. The feeling of chivalry and honor and respect for women is to be zealously cultivated. Biographies of great women and knightly great men should be read by boys and girls.
4. Emphasis must be laid upon the responsibility of brothers and sisters for one another's welfare; also by the boys' obligation to protect their sisters.
5. Expression of adolescent sex love in the form of enthusiasm for art, for altruistic social activities, for favorite intellectual pursuits, are to be encouraged along common-sense lines.

III. Personal Hygiene:

Hygiene and care of the reproductive organs and sex function as sacred obligations.

1. The relation of sex control to the health of the individual and of his or her offspring.
2. The danger of abuse of the sex function, and the results upon the nervous system, including the brain and spinal cord.
3. The importance of properly regulated food, of exercise and play, of physical fatigue (not exhaustion), of mental occupation, of early rising, of cold bathing, of sleeping in a cold room as means of control of sex feelings.
4. The influence of drugs (alcohol; tobacco, opium, cocaine) upon laws of sex control.
5. The significance of sex in human life in the light of plant and animal development as already studied.

IV. Amusements:

1. A careful choice of social pleasures and their environment is essential to moral health.
2. The wholesome meeting of boys and girls is the only safe preliminary basis for mature friendships and marriages.
3. Suggestive shows, posters, and books, also saloons and dance halls, go far toward nullifying the slipshod and careless home efforts.
4. Suggestive posters and pictures make the work of the unhygienic book, theater, saloon, and dance hall very easy.

LATER ADOLESCENCE (AGE 16-25 YEARS).

I. Biology:

1. A further study of the science of reproduction and its application to human life. Human embryology and heredity.
2. Animal breeding and its influence in the production of superior qualities in the animals.

I. Biology—Continued.

3. Human inheritance and its bearing on family histories.
 - (a) The inevitable result of the marriage of defectives.
 - (b) The inevitable result of the marriage of the most fit.

II. Sex Hygiene:

1. The relation of individual chastity to the moral and physical health of the individual and his or her unborn child.
2. The social diseases. Their nature, contagiousness, far-reaching effects, and their danger to the innocent.

III. Sociology:

The ultimate effects of unfair social relations, of the double standard of moral and physical health for the two sexes, of prostitution, and of the diseases consequent upon immorality.

THE METHODS OF TEACHING SEX HYGIENE.

PERIOD OF PARENTHOOD.

Through an intelligent use of the family physician as the natural instructor of the home in sex matters. The feeling of responsibility will ennoble and furnish a new sanity and health to home happiness and morals.

Through sane literature on the subject of sex hygiene, meaning by this term the healthy and reverent use of the sex function with a view to the future welfare of the individual and of his or her posterity.

Through schools yet to be established for the deliberate, intelligent training of parents and school teachers.

Through traveling exhibits, such as are possible through the instrumentality of the State societies of social hygiene or of the American Federation for Sex Hygiene.

Through lectures by physicians and by others fitted by nature and by training to teach.

Through deliberate measures on the part of heretofore negligent municipal and Federal authorities to awaken a slumbering people to the imminence of the danger and the means of prevention and cure.

Through a realization of the fact that the sex function is a sacred trust, not a plaything; a talent for reverent use by loyal citizens, not a means to the undermining of the health and life of the people.

EXPERIMENTAL PSYCHOLOGY.

The Cornell exhibit of experimental psychology.—The Cornell University exhibit in experimental psychology contained a quantity of the newer apparatus that has been developed in this increasingly significant field of knowledge, being especially rich in apparatus for testing intelligence. During the exhibit the Binet test, with certain of the recent modifications, was applied to children, particularly for the purpose of illustrating a class of experiments which it is intended to follow out on a wider scale with the hope that they will ultimately lead to important conclusions.

The relation of sense discrimination to intelligence was one of the subjects in which it was possible to make some experiments of interest. For this purpose there was at hand the following psychological apparatus: The Whipple discrimination-of-brightness apparatus—the ingenious dark-room box that operates by transmitted light; another type of Whipple apparatus working on the principle of reflected

light; the pressure-pain balance, which ascertains the point where mere pressure becomes pain; the sensory capacity tapping test; the warmth tester, wherein the influence of developed imagination is brought into play, etc. It is believed that ultimately tests based on experiments with this and similar apparatus will show more exact connection than is at present established between sense discrimination and intelligence.

In the Cornell booth there were naturally a number of exhibits of more definite popular interest, yet possessing educational value as measures of intelligence. Notable among these were the various "illusions": The size-weight illusion; the relation of size, form, and distance; and a number of the less familiar line illusions.

APPENDIX.

INSTRUCTIONS RELATING TO TUBERCULOSIS, DISTRIBUTED BY THE DEPARTMENT OF HEALTH, NEW YORK CITY.

How to keep from getting consumption.—Keep as well as possible, for the healthier your body the harder for the germs of tuberculosis to grow therein. To keep healthy, observe the following rules:

Avoid living, studying, or sleeping in rooms where there is no fresh air. Fresh air and sunlight are nature's best disinfectants and kill tubercle bacilli and other germs causing disease; so have as much in your room as possible.

Do not live in dusty air; keep the rooms clean, but do not sweep or dust with dry brooms or cloths. Get rid of dust by cleaning with damp cloths and mops.

Obtain fresh air by keeping one window in your bedroom partly open all night long, and air the room two or three times a day.

Always wash your hands before eating, and do not put your fingers or pencils in your mouth or candy or chewing gum other persons have used.

Take a warm bath with soap at least once a week.

Do not neglect a cold or a cough, but go to a doctor or dispensary.

How to get well if you have consumption.—If you or anyone in your family have tuberculosis, you should obey the following general rules if you wish to get well:

Money spent on patent medicines or advertised consumption cures is wasted. Go to a doctor or dispensary.

Do not drink whiskey or alcohol in any form.

Do not sleep in the same bed with anyone else and, if possible, not in the same room. *Good food, fresh air, and rest are the best medicines for consumption.*

Your windows should be kept open winter and summer, day and night.

How to avoid giving consumption to others.—Many grown people and children have pulmonary tuberculosis or consumption without knowing it and can give it to others. Therefore every person, even if healthy, should observe the following rules:

Do not spit on the sidewalks, playgrounds, or on the floor or hallways of your home or school. It spreads disease and is dangerous, indecent, and against the law.

Always spit into a paper cup or into paper napkins or old cloths. These should not be used a second time, but should be at once put into a paper bag, which should later be burned with its contents. Pocket flasks of metal or glass may also be used. If you have no cup or napkin, spit in the gutter. At home use a spittoon half filled with water.

Do not cough or sneeze without holding a handkerchief or your hand over your mouth or nose.

A person who has pulmonary tuberculosis or consumption is not dangerous to those with whom he lives and works if he sleeps alone and is careful and clean.

Rooms which have been occupied by consumptives should be thoroughly cleaned, scrubbed, and whitewashed, painted, or papered before they are again occupied. Carpets, rugs, bedding, etc., from rooms which have been occupied by consumptives, should be disinfected. Such articles, if the department of health be notified, will be sent for, disinfected, and returned to the owner free of charge, or, if he so desires, they will be destroyed.

INSTRUCTIONS RELATING TO TUBERCULOSIS.

41

When consumptives move, the department of health should be notified.

General advice to those affected.—Be hopeful and cheerful, for your disease can be cured, although it may take some time.

Carefully obey your physician's instructions. You may improve steadily for months, and lose it all by carelessness. Improvement does not mean cure, therefore continue treatment as long as you are directed to do so.

Do not talk to anyone about your disease, except your physician or nurse.

Do not listen to tales of other patients or follow their suggestions or those of others concerning the treatment of your disease.

Report to your doctor or clinic when directed. Report immediately if you have fever, indigestion, diarrhea, constipation, pain, increased cough, or reddish expectoration. If you are too ill to come, send word.

If you have a hemorrhage do not become alarmed; keep quiet and notify your doctor or clinic.

In the treatment of your disease fresh air, good food, and a proper mode of life are more important than medicines. Take no medicine that is not ordered by your physician.

If you are offered admission to a sanatorium, accept at once.

Advise any of your family, friends, or neighbors who have a persistent cough and have no doctor to go to the nearest tuberculosis clinic.

Cough and expectoration.—Try to control your cough as much as possible. You should only cough when you have to expectorate.

Cover your mouth with your handkerchief or hand when you have to cough.

Your expectoration or spit contains germs and is dangerous to yourself, your family, and your neighbors when not properly taken care of.

When in the house always spit into a spoon half full of water; empty the vessel in the closet at least once a day and rinse it with boiling water.

It is much better, however, to use paper handkerchiefs, which can be burned after use. The nurses of the department of health will supply these.

When outdoors, spit in one of the paper handkerchiefs furnished and put it in the paper bag, burning bag and all on your return home.

If you should be outdoors and have nothing with you to receive your expectoration, spit into the gutter. *Never spit on the sidewalk.* Never swallow your expectoration.

Pure fresh air.—Stay in the open air as much as you can; if possible, in the parks, woods, or fields. Do not be afraid of cold water. Avoid drafts, dampness, dust, and smoke. Dust and smoke are worse for you than rain and snow. Don't be afraid of night air; it is not harmful and contains less dust than day air.

Never sleep or stay in a hot or close room. Keep it always well ventilated.

Keep at least one window open in your bedroom at night.

Have a room to yourself, if possible; if not, be sure to have your own bed.

When indoors, remain in the sunniest and best ventilated room. The room should preferably be without carpets; small rugs may be allowed.

No dusting or cleaning should be done while the patient is in the room.

Cleaning should be done only with mops or moist rags.

Drapery, velvet furniture, and dust-catching materials should not be in the patient's room.

Food and feeding.—Take a half hour's rest on the bed or the reclining chair before and after the principal meals.

Avoid eating when bodily or mentally tired, or when in a state of nervous excitement.

Eat plenty of good and wholesome food. Besides your regular meals take a quart of milk daily, from three to six fresh eggs, and plenty of butter and sugar, provided they do not disagree with you.

Eat slowly; chew your food well; avoid anything which causes indigestion. See that your eating utensils are thoroughly washed after use.

Do not smoke and do not drink liquor, wine, or beer, except by special permission; but drink plenty of good, pure water between meal times.

Always wash your hands thoroughly before eating, and clean your finger nails.

Rest.—Avoid all unnecessary exertion. Never run; never lift heavy weights. Never take any kind of walking, breathing, or other exercise when you are tired, nor take them to the extent of getting tired. The kind and amount of exercise which you should take will be prescribed for you by your physician.

Go to bed early and sleep at least eight hours.

If you have to work, take every chance to rest that you can when off duty.

When the physician prescribes a rest cure, either in bed or on a reclining chair, it must be carried out, either on the veranda, fire escape, roof, or in front of an open window.

Clothing.—Wear underwear according to the season. Don't wear chest protectors. Dress comfortably and sensibly, and avoid garments constricting neck and chest.

Keep your feet dry and warm. Wear overshoes in snowy or damp weather.

Personal hygiene.—Keep your body clean and take a warm bath with soap once a week; take cold douches or cold baths according to the directions of your physician.

Avoid all bad habits.

Keep your teeth in good condition by brushing them regularly.

See that your bowels move regularly every day.

Shave your beard or wear it closely clipped. Do not kiss anyone.

Handle the soiled personal and bed linen, especially handkerchiefs, as little as possible in the dry state. When soiled, place these articles in water until ready to be washed.

Don't waste time or money on patent medicines or advertised cures for your disease; they are worthless.

Sweeping and dusting.—In sweeping a room raise as little dust as possible, because dust, when breathed in, irritates the nose and throat and often sets up catarrh. Some of the dust breathed reaches the lungs, making portions of them black and useless.

If the dust breathed contains the germs of tuberculosis or consumption—tubercle bacilli—which come from persons who have pulmonary tuberculosis—spitting on the floors, the risk is run of getting the disease. If the sick person uses proper spit cups and is careful to hold a handkerchief over the mouth when coughing or sneezing, so as not to scatter spittle about in the air, the risk to others who live in the same rooms of getting the disease is inconsiderable.

Before sweeping bare floors, sprinkle moist sawdust on the floor. When the room is carpeted, wet a newspaper, tear it into small scraps and scatter these over the carpet. In sweeping, brush these scraps of paper along with the broom, and they will catch most of the dust and hold it fast, just as the sawdust does on bare floors. Do not have either the paper or the sawdust dripping wet, only moist.

In dusting a room, do not use a feather duster or dry cloths, because these do not remove the dust from the room, but only brush it into the air.

Do all dusting with slightly moistened cloths and rinse them out in water when finished.

In rooms with bare floors (in houses, stores, shops, schoolrooms, etc.), all dust can be easily removed after it has settled, by using a mop which has been wrung out so as to be only moist, not dripping wet.

INSTRUCTIONS RELATING TO TUBERCULOSIS.

43

REPORT OF DISINFECTION IN A PRIVATE HOUSE.

This certifies that the premises named herein have been fumigated, as noted, and in compliance with the regulations mentioned below.

NEW YORK, July 19, 1911.

Name of patient, *John Smith*. Age, 25. Disease, *consumption*. Duration of illness, 6 months. Residence, 1850 University Place. Number of rooms disinfected, 2. Number cubic feet, 8,000. Disinfectant used: *Formalin*, 18 ounces; *Sulphur*, pounds. *Paraform*, grains. Time room left exposed to disinfectant, 6 hours. Disinfecting solution employed, *Carbolic*, 2 per cent.

Name, *James Brown, M. D.*,

Residence, 933 East First Street.

In every case of disinfection the following regulations must be complied with:
All cracks or crevices in rooms to be disinfected must be sealed or caulked, to prevent the escape of the disinfectant.

The following disinfectants may be used in the quantities named:

Sulphur, 4 pounds for every 1,000 cubic feet, 8 hours' exposure.

Formalin, 6 ounces for every 1,000 cubic feet, 4 hours' exposure.

Paraform, 1 grain to every cubic foot, 6 hours' exposure.

Carbolic acid, 2 per cent to 5 per cent solution, and *bichloride of mercury*, 1-1000, may be used for disinfecting solutions.

PART II. ABSTRACTS OF PAPERS BEARING ON EDUCATION.

RINGWORM IN THE SCHOOLS OF MEXICO.

Dr. MANUEL URIBE Y TRONCOSO.

Spanish Hospital, Mexico City, Mexico.

During the school year 1910-11, 2,784 pupils were separated from the public schools of the City of Mexico on account of ringworm. With an attendance of 34,168, this gives 8.2 per cent of ringworm (tinea) patients. In the municipalities outside of the federal district 365 scholars were excluded from the schools, which gives an average attendance of 23,265 scholars, with 1.5 per cent of tinea patients. The disease is widely disseminated in the schools. Considering the great number of children with tinea and the imperative necessity of keeping them out of school so as to prevent the spread of the disease, it was decided to make use of the X-ray treatment, which reduces the duration of the old methods of depilation by tweezers from two years to two or three months.

Two special schools were established for children affected with tinea, each with a capacity of about 300 scholars, and both located in the building occupied by the medical department.

In this manner the sick children are constantly under observation, treatments are given regularly, and the progress of the depilation watched. Moreover, the children, being enrolled for the school year in their respective schools, do not lose any time, and the treatment as well as the usual lessons are systematically pursued.

The number of children enrolled in the school from January to March, 1911, and in the two schools for boys and girls from July, 1911, until February, 1912, was as follows:

Enrolled boys.....	284
Enrolled girls.....	216
Individual exposures to the X rays.....	280
Total number of exposures.....	1,165
Children upon whom depilation took place.....	132

SCHOOL DISINFECTION.

Dr. J. T. AINSLEE WALKER.

New York City.

The presence of a certain proportion of infectious children in the school is admittedly unavoidable; the only apparently available weapon of defense lies in the everyday use of spray solutions of

disinfectants to be sprinkled upon walls and desks and floors of schoolrooms. In addition to recognized cases of diphtheria, measles, scarlet fever, and whooping cough in the schools, there always is a certain percentage of children who are merely carriers of disease germs without themselves being affected by the microorganisms which find lodgment within their bodies. These children are even a greater menace to their classmates than are the children who actually show visible symptoms of disease, because in the bacillus carriers the presence of the germ danger can not be recognized. Disinfectants used in sprays are much more effective than disinfectant gases, because the former lay the dust in the rooms, which, after all, constitutes the greatest carrier of disease germs from child to child.

Having regard to the constant recurrence of epidemics among school children and to the failure of all existing preventive measures, routine disinfection of schoolrooms should be given a thorough trial. In the absence of this precautionary measure, the infective material diffused by children in the unrecognized stages of certain infectious diseases must accumulate on the schoolroom floors and constitute a standing menace to the health of pupils and teachers alike. Considering that the major part of school infection is due to direct contact, a certain proportion is also due to the inhalation of bacilliferous dust.

Routine disinfection was introduced into the elementary schools of Great Britain in 1907. An experiment extending over a year was carried out by the Buckinghamshire education committee with a view to obtaining reliable data. The result showed an appreciable superiority in the attendance at the disinfected schools over those at the nondisinfected schools.

For school disinfection, the liquid-spray method is preferable to that of fumigation, for three reasons. It costs less; it insures actual contact between the disinfectant and the infected material; and it prevents dust from rising. At the close of each day the classroom floors should be thoroughly moistened with an efficient germicidal solution, and the desks and seats wiped with a cloth wrung out of the same preparation. Once a week the process should be extended to include the walls to a height of 6 or 7 feet above the ground, and once a quarter the classrooms should be thoroughly sprayed from floor to ceiling.

CAMPAIGN AGAINST CONTAGIOUS DISEASES OF CHILDREN.

DR. WALTER EWALD.

Academy of Social and Commercial Science, Frankfort, Germany.

Contagious diseases have either yielded to modern hygiene or have at least been greatly affected, excepting infectious diseases of children, which in part only are true children's diseases. The terrible effect

of contagious diseases of children is not merely disclosed by mortality statistics, but in a general decline of young people. The battle can not be the same as in other infectious diseases where we have to proceed against bacterial components. Exciting and disseminating agents are rarely found in children's diseases.

Among the characteristics of the four diseases, measles, scarlet fever, diphtheria, and whooping cough, are some of great importance, because they give hints how best to combat the disease. From an inquiry into morbidity and mortality by age periods we have learned that whooping cough is most prevalent and registers the highest mortality among infants, and that the other diseases appear most commonly between the ages of 2 and 5. If then we are to combat mortality in children's diseases, we must consider the fact that diseases intrinsically not so very dangerous may result fatally when they attack very young children, where rachitis exists and when they occur among the poor and especially in insanitary surroundings. It is against these conditions that we must direct our energies; we must isolate very young children, insist upon hygienic living quarters, and provide for proper feeding of infants. Either the afflicted or the unaffected children may be isolated, and it is said that both measures have been resorted to in scarlet fever. It should perhaps be the duty of the authorities to provide living quarters for the healthy but suspected children. In diphtheria, antitoxin reduces mortality. All diseases should as far as possible be under medical treatment. In order to combat the diseases themselves special measures are necessary. An efficient agency for combating diseases might result from an organized special force of caretakers by keeping a record of all cases of sickness occurring at school. Such cases should be investigated and a physician consulted, and in case of necessity, brothers and sisters should be guarded against contagion. This method of protection might be further extended in connection with medical inspection of schools. In view of the large number of fatalities resulting from contagious diseases of children, systematic measures are necessary.

MANAGEMENT OF TUBERCULOSIS AMONG SCHOOL CHILDREN.

DR. ARTHUR T. CABOT.

Boston, Mass. (Died November 4, 1912.)

Proper measures for the prevention and control of tuberculosis among school children should look not only to the protection of children during their school life and to the cure of those that have active tuberculosis, but should aim at the education of all children, in the essential facts of hygiene with, as far as possible, the cultivation of habits of living which will protect them later in life.

The plan of caring for feeble, anemic, and under-nourished children (of the class from which so many tuberculous children later develop) in open-air rooms, or indeed out of doors, with short hours of work and with extra feeding, has been so often tried and the results have been so satisfactory in improving the health and increasing the power of work, that the open-air treatment of ailing children is being more and more widely adopted. The benefits in health derived from this school work in the open air are so evident that it is hoped that it will be more and more supplied to the healthy as well as to the sick. Such provisions will meet the needs of all but the open cases of tuberculosis. Children with open, declared tuberculosis should be separated from other school children and should be constantly under close medical supervision. For them the recovery of their health is of the first importance and their schooling is of secondary consideration. Well-to-do parents can give their children proper care at home with such schooling as may be wise, but for the children of parents who can not afford this special care, some public provision must be made by which these children may be cared for and kept apart from other nontuberculous children. Two ways have been devised for accomplishing this: (1) Hospitals; (2) hospital schools.

Isolation hospitals would naturally give the most complete segregation of these children, but unfortunately only a small proportion of the parents are willing to have their children go to a hospital. The result is that in a community where only hospital accommodation is provided, the greater part of the tuberculous children go to the public schools, or when too sick for that they stay at home, spreading the infection through their family and friends. The hospital school affords less complete isolation than a hospital, but with a proper corps of nurses who follow the children to their homes and teach the parents necessary preventive measures, much in the way of prevention may be accomplished.

The school has the great advantage that the parents are willing to send their children to it. The nurses connected with the school are able to follow the children to their homes and so extend the hygienic teaching to the parents. Upon the whole, therefore, the hospital school is the best means yet devised for caring for the already tuberculous children.

STUDIES IN THE RELATION OF PHYSICAL INABILITY AND MENTAL DEFICIENCY TO THE BODY SOCIAL.

DR. ISABELLE T. SMART,

Department of Education, New York City.

The studies cover personal examinations of children reported by school principals and teachers as mentally defective and in urgent need of specialized training. Interesting data have been gained by

study of the nationality of the various groups. Heredity and environment are frequently evidenced in physical weaknesses as well as in mental defect. Alcoholism in parents produces stock degeneracy, both physical and mental. Sequelæ of many of the contagious diseases of childhood have a marked influence on the physical and mental well-being of the child.

The facts presented show the need of:

1. Greater latitude in the arrangement of school curriculum.
2. Greater scope in, and application of, school hygiene.
3. The need of an increased and more comprehensive propaganda in the instruction of mothers and fathers in the hygiene of daily life.
4. The absolute necessity of more school clinics and more hospital clinics arranged at hours to suit the needs of the school child, instead of, as at the present, during the hours of the school day.
5. The urgent need of after-care committees to guard and protect, in so far as possible, the children who suffer in any degree from mental defect.
6. The necessity for legislation to meet the present needs in the proper care of mental defectives and to prevent any reproduction of their kind.
7. The urgent necessity of the building of more colonies, in all our States, for the permanent care of aments.

EDUCATION OF IMMIGRANTS IN SCHOOL.

DR. WILLIAM E. CHANCELLOR,

South Norwalk, Conn.

The relation of teacher and pupil with special reference to the education of immigrants in American public schools was presented. The observation of children of many races and nations, a detailed study of 1,500 cases out of 4,000 in all, and tests covering 40 points, mostly scholastic, but some physiological, seem to indicate the following conclusions which are submitted tentatively:

Conclusions: Brachycephaly, mesocephaly, and dolichocephaly in its two forms—Mediterranean and Teutonic—each has its definite temperamental meaning.

Certain races are precocious, others are normal or average, and still others are altricious—each of these conditions makes a temperamental condition as its phase or result.

In dealing with immigrants not yet familiar with American life and often not speaking the English tongue, a proper relation of temperaments of pupils and teacher is far more important than elsewhere. The school for immigrants becomes mainly an atmosphere of social feeling.

Muscular-motor young women seem to secure the best results in classes with great varieties of the foreign born.

Women of the same nationality with the prevailing nationality of the class come as second choice.

A certain highly sympathetic yet not excessively intellectual race, the Irish, and they of the female sex, bridge the gulf between the foreign child and the world that he must learn.

The work is concerned mostly with Italians, Hungarians, and Russian Jews, in kindergartens and primary classes, and seems to indicate grave errors in the careless practice of the times. The great business of these grades is to readjust the reactions to environment, to train in new and far more complicated habits than the ancestry ever achieved, and to bring into sympathetic relations new and often resented ideas. Thus certain races resent the idea of the finer courtesies to women, even to their own teachers, and often to their own mothers and sisters. Different races, because of precocity or altricity, must be handled very differently in inculcating such ideas. In short, education is individual, and this has a far deeper meaning than current schooling undertakes to express. Race temperament is one clue.

SERVICE OF MEDICAL INSPECTION OF SCHOOLS TO THE TEACHER.

DR. HELEN MACMURCHY,

Toronto, Canada.

Organization.—Medical inspection of schools tends to better organization and so increases the comfort and efficiency of the teacher and protects her from infection.

New interest.—Medical inspection widens the teacher's horizon and brings the schoolroom into the sphere of interest of modern preventive medicine. The average school child may be made a sanitary reformer and the teacher is the only one who can do it.

Difficulties of the teacher.—If the pupil can not hear the teacher or see distinctly the words, figures, etc., referred to by the teacher, then the efforts which should help the child are partly or wholly lost, and the teacher's work is rendered harder and less fruitful. Medical inspection, by ascertaining the condition of the general health, eyes, ears, etc., and leading to the cure of any defects and diseases, helps the teacher to do the work of the classroom.

The teacher often feels that something must be wrong with the child, but either does not know what it is or fears that any attempt to direct the parents' attention to the defect will cause unpleasantness, or at best will not remedy the trouble. The medical inspector here becomes the teacher's helper, because the school physician can

not only diagnose what is wrong, but has the authority to cause it to be set right.

Mentally deficient children.—These pupils are the source of much difficulty to the teacher, often causing disorder in the class. Medical inspectors should remove these children to special classes, to their own benefit and to the great relief of all concerned.

The child as a human being.—Medical inspection of schools, dealing with each child personally, tends to impress on us the individuality of each child, and directs attention to his endowments of strength, special senses, etc. We are always trying to deal with human beings as soldiers, lawyers, children, women, Chinamen, or something less than human beings. The man or woman who is dealing with human beings as such (e. g., the teacher) is doing the highest kind of work.

The teacher's own health.—The health of the teacher suffers chiefly from—(1) Impure air and infection. Diseases such as common colds, pneumonia, tuberculosis. (2) Eyestrain, caused by poor lighting, etc. (3) Nervous strain, caused by constant demands on the will power, patience, self-control, association with immature minds, etc. The dignity of the teaching profession is increased by the fact that by the law of the country one of the other learned professions has been called to the teacher's aid and authorized to use modern, scientific methods to prevent school infection, to improve schoolroom hygiene, schoolroom habits, ventilation, lighting, heating, cleaning, and the general morale of the classroom. Medical inspection of schools may be expected to improve the health of the teacher.

FOLLOW-UP SYSTEM IN MEDICAL INSPECTION.

DR. THOMAS A. STOREY,

College of the City of New York, New York City.

In the department of work under the author's supervision, an attempt has been made to secure a method of instruction in hygiene which will develop permanent health habits in the individual. Medical inspection becomes a part of a method of securing information concerning the hygienic needs of the individual, and a basis on which the individual may be given advice bearing upon his personal health problems.

The important feature in the plan lies in the method of following up instructions to the individual. The percentage of parents that refused to secure treatment for their children during the year ending June 1, 1911, was seven-tenths of 1 per cent, and for the year ending June, 1912, eight-tenths of 1 per cent.

An outline of the routine involved in following up this instructional advice is given. A card-index system is employed and a "conference

card" is made out and filed; another card is given to the pupil, files are gone over every day or two, and cases followed up. The success of this "follow-up" system during the year ending June 1, 1912, justifies the following conclusions:

First. This method of medical inspection is effective, securing the repair of physical defects and correcting unhygienic conditions in over 90 per cent of cases. It is improving the physiological efficiency of at least a thousand boys every half year.

Second. This plan of individual instruction in personal hygiene has met with the support of the parents of practically all of the boys. Such support is essential to success.

Third. It is safe to expect that this continued personal relationship, extending throughout the high-school period and covering the first two collegiate years, will develop permanent habits of personal health control in many if not most of the boys under supervision.

HYGIENE OF CHILDREN'S TEETH.

WILLIAM H. POTTER, D. M. D.,

Professor of Operative Dentistry, Harvard University, Cambridge, Mass.

Until recent times, an incorrect emphasis has been given to the functions of the teeth. Much stress has been laid upon the part which they play in forming an attractive facial expression and in the production of spoken words. Comparatively little has been said in regard to the necessary part which they play in the preparation of food, so that it can be readily digested and thoroughly assimilated, which secures the development and upbuilding of the body and its fortification against disease. If the child is to have the physical benefits which come from a thorough digestion and assimilation of its food, if it is to acquire intelligence as to the kinds and quantity of food which are suitable for the development of the body, sound teeth, properly articulated, are absolutely essential.

Decayed and diseased teeth, on account of their defective surfaces, not only make a thorough treatment of the food in the mouth impossible, but they are the means of producing, developing, and nourishing that which is hostile to the child's physical welfare. The pockets of decayed teeth harbor many bacteria of a serious sort, notably those of diphtheria, pneumonia, and tuberculosis. If pockets of decay did not exist, harmful bacteria would have a much less favorable resting place in the mouth; their numbers could be reduced to a minimum and the chance of infection also lessened.

The actual condition of children's teeth can be best studied in our public schools. Examinations have shown that 70 to 90 per cent of all children in the public schools have defective teeth. The treat-

ment of defective teeth of children in public schools and institutions, whereby unclean, inefficient mouths have been made and kept clean and efficient, has been followed by a notable increase in the general physical health of the child.

It is without question of the greatest importance that children have clean and healthy mouths. How can it be brought about?

1. In all public schools there should be careful instruction given as to the nature of the teeth; their uses; the diseases which attack them; and the methods for preventing or diminishing these diseases. Children and their parents should be taught that the cleaning of the teeth and their thorough use upon hard foods will much reduce and perhaps prevent decay. School-teachers must assume an oversight in regard to their pupils' teeth.

2. Examinations of the teeth of all school children should be made at least twice a year.

3. Establish in school buildings school dental clinics in charge of dentists paid by the municipality. Add the services of a dental nurse, if the law makes them possible. These school clinics are to serve only those unable to consult a private dentist. A small fee should be charged in every case if possible.

4. Begin work upon school children before serious decay has occurred in their permanent teeth, and continue the supervision and necessary repair work through the twelfth year.

DENTAL HYGIENE FOR PUPILS OF PUBLIC SCHOOLS.

Dr. S. ADOLPHUS KNOFF,

New York Post-Graduate Medical School, New York City.

The existence of bad and decayed teeth is a disease of the masses as much as is tuberculosis, and as such it must be combated particularly in children of school age.

Just as we have societies for the prevention of tuberculosis, for the prevention of venereal diseases and alcoholism, representing the three great diseases of the masses, so should we have a society for the treatment and care of children afflicted with dental diseases. This society should be composed of all classes, medical and lay people, just as are the above-mentioned classes of societies. It would enable everyone who has the children's welfare at heart to contribute according to his means. The funds thus collected would materially aid to defray the expenses of taking care of the school children's teeth. Such a national society exists already in Austria. This society is composed of high officials of the Empire, statesmen,

pedagogues, physicians, teachers, and people of all sorts of professions and trades.

Let us have free and partially free dental clinics; let each child be carefully and practically reexamined for every possible physical and mental deficiency; let no child pass through life with a pathological or esthetic defect which can be prevented by timely treatment and care. The result of such provision will be better health and happier citizens.

UNIVERSAL SYSTEM OF MEASUREMENTS.

Dr. LEONARDO MÁTUS Z.,

Santiago, Chile.

It has been years since scientific studies enabled us to determine accurately where the best racers are bred, but as yet no system has been established by which we can ascertain accurately where the most uniformly constituted human being is found; for anthropologic and ethnologic studies have not yet attained perfection. The basic factor preventing the complete study of the human race resides to-day in the lack of a universal standard of measurement.

Past congresses have been unable to determine upon the principal measurements to be applied to the individual. There is need of instruction in technique applied to the *living* person. The establishment of a universal standard of measurements, uniform apparatus, and uniform method of procedure are essential.

DEVELOPMENT OF HYGIENE IN EDUCATIONAL INSTITUTIONS.

Prof. DUPLEY A. SARGENT,

Harvard University, Cambridge, Mass.

Physical training was first introduced into our educational institutions largely as a health measure when one or two college presidents and prominent educators called attention to deterioration in health of college students. Amherst was the pioneer college in this movement, and in 1860 appointed a professor of hygiene and physical education, and a few years later a number of other colleges appointed directors to their gymnasiums.

The students were required to attend a few lectures on physiology and hygiene, supplemented by required work in the gymnasium, both without credit. The growing athletic interest in colleges was another agent in establishing physical training in educational institutions. It was not until stimulation toward physical training was aroused through ambition to get into good physical condition for athletic con-

tests, or to excel in some sport or game, that our students found an incentive to adopt improved methods of living, or, in other words, began the practice of applied hygiene.

The college missed that early opportunity of placing before the students, through credited instruction, a vital and individual responsibility in regard both to their own health and to that of the community. The students, not being given a compelling object for which to strive, evolved their own aims through athletics. This hygiene interest has been evolved also among those striving to increase the efficiency of their lives from a commercial standpoint. Here again, the vital stimulus of necessity to be physically fit for labor, and to produce that labor under sanitary conditions, has resulted in a regard for public hygiene which the colleges have long ignored as an integral part of their curriculum.

There were several causes why the college failed to recognize the dignity of personal hygiene in practice as well as in theory; first, the baneful influence of all the evils of "professionalism;" second, the difficulty of getting young men of character and ability to take up physical training as a life work. Another factor lay in that separation of the student body whereby one class was prone to neglect their mental work and carry athletics to excess, while the other was encouraged by the premium put on scholarship to neglect their physical well-being.

But we are learning to broaden our conception of education, especially in realizing the bearing of physical conditions upon mental and moral life. Up to the year 1910 Dr. Meylan estimated that 98 per cent of the 136 colleges and universities in the list of the Carnegie Foundation had gymnasia, 94 per cent had regular instruction in gymnastics, and 80 per cent in athletics. In 75 per cent of these institutions the director of physical training is a member of the faculty, and in 87 per cent some form of physical training is prescribed. A recent investigation of 390 colleges, universities, mechanical and agricultural schools, etc., all over the United States shows that about 43 per cent of all, and 70 per cent of those that have recognized departments of physical training, have well-defined courses in personal hygiene, sanitation, and public health, either connected with physical training, or general electives.

The chief value, up to the present time, of physical training and hygiene has been in increasing the functional power of the individual. It now rests with our higher institutions of learning to transform that power from an individualistic tendency into an awakening of public consciousness, through realization of the intimate connection between education and the demands of society.

TRAINING IN PERSONAL HYGIENE IN PRIVATE AND PUBLIC SCHOOLS.

Prof. JOHN W. RITCHIE,

College of William and Mary, Williamsburg, Va.

Members of this congress regard hygiene as important, because they realize the possibilities there are in it for mankind. School authorities and teachers give little attention to hygiene because they have no comprehension of these possibilities. We must first of all convince teachers that health can be earned and purchased. Nothing so quickly brings them to a realization of the preventability of disease as comparative morbidity and mortality tables accompanied by simple explanations of the fundamental causes of disease.

Systematic instruction in the principles of hygiene is necessary to keep pupils from becoming lost in the multitude of details. This instruction should be founded on a solid knowledge of the structure and functions of the different organs of the body, and of the principles governing metabolism and microbial infection. As long as the people of countries like the United States persistently follow hygienic fads and fail to discriminate between arrant quacks and reputable medical practitioners, it is an exceedingly short-sighted policy that desires to exclude from our school courses in hygiene those fundamentals of anatomy, physiology, and bacteriology which throw the broad guiding lines through the maze of hygienic practice.

The teaching of hygiene should be begun before the habits of the child are fixed. Ordinarily nothing short of a complete collapse of the health will shake an adult out of his accustomed habits of eating, sleeping, and working. Even some of the world's authorities on hygiene daily violate the rules they lay down for the public because they formed their habits of living before they acquired their knowledge of hygiene. The teaching of hygiene should be begun while the child is yet in the plastic age, so that he can be sent out from school with a physical expression of his hygienic instruction in the habits of his life.

Individual attention should be given to the hygienic habits of the child. Toothbrush clubs, fresh-air clubs, and other organized hygienic efforts are very valuable in fixing correct living habits. Much can be done to develop a right attitude toward hygienic questions and to fix the habit of properly regulating local environment by good hygienic conditions in the schoolroom and in the home.

THE PUBLIC SCHOOL AS A FACTOR TO LESSEN INFANT MORTALITY.

Dr. HENRY L. COIT,

Newark, N. J.

A comprehensive plan to check sickness and death among infants and young children is proposed by adding the French plan to the Manchester plan for "Little Mothers" and providing that the "Consultation for mothers" shall be conducted within the public school and finally become a part of its system.

The best means of preventing sickness and death would be to raise the living power of the individual to what is called immunity. If we could apply this principle to infancy and childhood through educational and prophylactic measures, we would bring about the greatest possible physical efficiency in manhood and womanhood.

While physicians have led in this crusade against infant mortality, it is strictly a problem in preventive medicine, and therefore clearly to be solved by educational methods, which should be applied by the people (the State), at the expense of the people, and for the people.

It can not be repeated too often that the most fundamental cause of infant and child mortality, expressed through many channels, is ignorance, and the most potent influence which will destroy and remove it is applied knowledge.

The instruction has, therefore, been given by private philanthropy in hospitals and infant welfare stations at a few isolated points and has been made available for comparatively few of the great mass of mothers who need it most.

PHYSIOLOGICAL AGE IN EDUCATION.

Dr. C. WARD CRAMPTON,

Director of Physical Training, Public Schools, New York City.

Children should be classified according to their physiological development, rather than according to their school age in years. From birth to maturity children develop at different rates, some outstripping others in the race, so that we find at the age of 14 about one-third who are already men and women, one-third in a transition period, and one-third quite immature. The difference between the mature and immature of the same age is so marked that it is astonishing that the idea of separating them for educational purposes has not occurred to our school authorities. The mature group are 30 to 50 per cent heavier, 30 to 50 per cent stronger, and 10 to 15 per cent taller than the immature group of the same age. The mental abilities show an even more striking difference; the type of memory

changes from rote to associative; the mental grasp is increased by an influx of newly ripened instincts, resulting from the change from an unsexual to a sexual existence. The whole attitude toward life becomes attached to manly or womanly things, and the business of childhood is put behind. All these changes occur at about the time that the voice deepens, the second molar teeth arrive, and other easily recognizable signs of maturity appear. In short, of those who are from 12 to 15 years of age, we find some are young men and others are children, regardless of their ages in years or progress in school. We find the young men with their ripened potential abilities sitting on the same benches, taught the same lessons, and subject to the same discipline as children, and the results are quite as poor as they would naturally be under these circumstances. The fundamental fact that the immature and mature are wholly different and should receive different educational and social treatment is disregarded. In the elementary school the mature do badly; in the high school, frankly fitted to their needs, they do 20 to 50 per cent better than the immature. While it is at this point the educational system on the inflexible basis of scholasticism and chronological age breaks down, it suffers from a lack of rational classification wherever mature and immature children are brought together in the same classroom.

SCHOOL CHILDREN OF THE STOCK YARDS DISTRICT OF CHICAGO,

Dr. CAROLINE HEDGER,

Chicago, Ill.

Statistics indicate that almost 50 per cent of the children of the Stock Yards district showed material retardation in the two schools in the district from which the 200 pupils studied were taken. In the region in which they live the smoke comes down in clouds, and with it comes the smell of the fertilizer plants. This is not conducive to deep breathing or sound sleep, and the children impress one as lacking oxygen, being round-shouldered, thin, and rather pale. Statistics show also that the children as a whole are bad, physically, in almost the direct proportion as they receive insufficient food, have little room to live in, are forced to sleep in crowded beds, and have the reflected worry from taxes and mortgages. They have not the spirit and the nervous balance to make their grades. If the child grows inactive, discontented, becomes idle and criminal, is the child to blame?

